|  |
| --- |
|  |

|  |
| --- |
| 1. Do the operation and express the answer in *a* + *bi* form. Use fractions in your answer.​ |

|  |
| --- |
| *Indicate the answer choice that best completes the statement or answers the question.* |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2. Write the expression as a single radical. Then simplify your answer.​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3. Solve the following absolute value equation for *q*. ​

|  |  |  |
| --- | --- | --- |
|   | a.  | –3, 13 |
|   | b.  | –3, –1 |
|   | c.  | 13 |
|   | d.  | –3, 3 |
|   | e.  | –1 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4. Place the correct symbol ( <, >, or = ) between the two real numbers.​| –4 |     4​

|  |  |  |
| --- | --- | --- |
|   | a.  | | –4 | = 4 |
|   | b.  | | –4 | ≥ 4 |
|   | c.  | | –4 | ≤ 4 |
|   | d.  | | –4 | < 4 |
|   | e.  | | –4 | > 4 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. Approximate the numbers and place the correct symbol (< or >) between them.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | –4.5 > 2 |
|   | b.  | –4.5 ≤ 2 |
|   | c.  | –4.5 = 2 |
|   | d.  | –4.5 < 2 |
|   | e.  | –4.5 ≥ 2 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7. Evaluate the expression without using a calculator. ​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  | 128 |
|   | e.  | –128 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8. The height, *h*, in feet, of a baseball above the ground *t* seconds after it is hit is given by . Use this equation to determine the number of seconds, to the nearest tenth of a second, from the time the ball is hit until the ball hits the ground.​

|  |  |  |
| --- | --- | --- |
|   | a.  | 3.8 s |
|   | b.  | 3.9 s |
|   | c.  | 4.0 s |
|   | d.  | 4.1 s |
|   | e.  | 4.2 s |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9. Write the number in scientific notation.​12,000.4​

|  |  |  |
| --- | --- | --- |
|   | a.  | 1.20004 × 102 |
|   | b.  | 12,000.4 × 102 |
|   | c.  | 12,000.4 × 104 |
|   | d.  | 1.20004 × 104 |
|   | e.  | 1.20004 × 103 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. Simplify the radical expression. ​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11. Solve the following equation (if possible) :​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 7 |
|   | b.  | -5 |
|   | c.  | -7 |
|   | d.  | 5 |
|   | e.  | No solution |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12. Simplify the following expression.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13. Perform the operation and write the result in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14. Find real numbers *a* and *b* such that the equation is true.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15. Factor out the common factor.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 16. Simplify the complex fraction.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17. Evaluate the following expression.​42 · 4​

|  |  |  |
| --- | --- | --- |
|   | a.  | 9 |
|   | b.  | 68 |
|   | c.  | 27 |
|   | d.  | 67 |
|   | e.  | 64 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18. Factor the trinomial.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19. Evaluate when *y* = 5 and *z* = –2.​

|  |  |  |
| --- | --- | --- |
|   | a.  | –60 |
|   | b.  | 3,000 |
|   | c.  | –216,000 |
|   | d.  | –1,500 |
|   | e.  | –1,200 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20. Plot the following real number on the real number line.​–3.5​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​ |
|   | b.  | ​ |
|   | c.  | ​ |
|   | d.  | ​ |
|   | e.  | ​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 21. Write the complex number in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 9*i* |
|   | b.  | –9*i* |
|   | c.  | 81*i* |
|   | d.  | 10*i* |
|   | e.  | –81*i* |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 22. Use a calculator to approximate the number. (Round your answer to three decimal places.) ​

|  |  |  |
| --- | --- | --- |
|   | a.  | 2.520 |
|   | b.  | 48.000 |
|   | c.  | 4.000 |
|   | d.  | 5.333 |
|   | e.  | 19.000 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 23. Simplify the complex number and write it in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 24. Jordan is driving along a highway that passes through Moyock. His distance, *d*, in miles, from Moyock is given by the equation  where *t* is the time, in hours, since the start of his trip and . Determine when Jordan will be exactly 90 miles from Moyock. Round to the nearest minute.​

|  |  |  |
| --- | --- | --- |
|   | a.  | 7 hrs 52.5 min and 2 hrs 22.5 min |
|   | b.  | 2 hrs 52.5 min and 2 hrs 22.5 min |
|   | c.  | 7 hrs 22.5 min |
|   | d.  | 2 hrs 52.5 min and 7 hrs 22.5 min |
|   | e.  | 2 hrs 22.5 min |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 25. Use absolute value notation to describe the situation.​The distance between *x* and –12 is at least 5.​

|  |  |  |
| --- | --- | --- |
|   | a.  | |*x* + 12| > 5 |
|   | b.  | |*x* + 12| ≤ 5 |
|   | c.  | |*x* + 12| = 5 |
|   | d.  | |*x* + 12| < 5 |
|   | e.  | |*x* + 12| ≥ 5 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 26. Find all solutions of the equation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 6 |
|   | b.  | 3 |
|   | c.  | 4 |
|   | d.  | 5 |
|   | e.  | 7 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 27. Perform the operation and write the result in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 28. Write the complex conjugate of the complex number. Then multiply the number by its complex conjugate.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 29. Write the rational expression in the simplest form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 30. Determine whether the value of  is a solution of the inequality.​

|  |  |  |
| --- | --- | --- |
|   | a.  | Yes |
|   | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 31. Perform the operation(s). (Write fractional answers in simplest form.)​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 48 |
|   | b.  |  |
|   | c.  | 14 |
|   | d.  |  |
|   | e.  | 2 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 32. Evaluate the following expression.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 33. Use a graphing utility to graph the equation. Use the graph to approximate the values of *x* that satisfy each inequality.​*Equation:*​*Inequality:*​

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | ​​ | b.  | ​​ |
|   | c.  | ​​ | d.  | ​​ |
|   | e.  | ​​ |  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 34. Use the properties of radicals to simplify the following expression.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 35. Solve the following equation. ​

|  |  |  |
| --- | --- | --- |
|   | a.  | –7 |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 36. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 37. Use a graphing utility to graph the equation. Use the graph to approximate the values of *x* that satisfy the inequality.​*Equation:*​*Inequality:*​

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | ​​ | b.  | ​​ |
|   | c.  | ​​ | d.  | ​​ |
|   | e.  | ​​ |  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 38. Perform the operation and write the result in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 39. Evaluate the following expression without using a calculator.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 3.6 × 104 |
|   | b.  | 3.6 × 10–3 |
|   | c.  | 3.6 × 107 |
|   | d.  | 3.6 × 10–7 |
|   | e.  | 3.6 × 10–4 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 40. Determine which number/s in the set is/are natural number/s.​{2.65, 0.669..., –2, 0.019937247..., 35, –20}​

|  |  |  |
| --- | --- | --- |
|   | a.  | 35, –20 |
|   | b.  | 2.65, 0.669..., –2, 35, –20 |
|   | c.  | –2, 35, –20 |
|   | d.  | 0.019937247... |
|   | e.  | 35 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 41. Solve the equation and write complex solutions in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 42. Determine which of the given expressions is NOT a polynomial.​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 43. The period *T* (in seconds) of a pendulum is , where *L* isthe length of the pendulum (in feet). Find the period of a pendulum whose length is 4.0000 feet.​

|  |  |  |
| --- | --- | --- |
|   | a.  | 1.004 sec |
|   | b.  | 2.220 sec |
|   | c.  | 4.220 sec |
|   | d.  | 3.220sec |
|   | e.  | 2.720 sec |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 44. An artisan can produce and sell *x* hats per month. The total cost *C* (in dollars) for producing *x* hats is *C* = 410 + 17*x* and the total revenue *R* (in dollars) is *R* = 37*x*. Find the profit *P* in terms of *x* and, using that function, find the profit obtained by selling 50 hats per month.​

|  |  |  |
| --- | --- | --- |
|   | a.  | Profit in terms of *x*: 20*x* - 410Sell per month: $590 |
|   | b.  | Profit in terms of *x*: 20*x* - 410Sell per month: $17 |
|   | c.  | Profit in terms of *x*: 20*x* + 410Sell per month: $590 |
|   | d.  | Profit in terms of *x*: 37*x* + 410Sell per month: $590 |
|   | e.  | Profit in terms of *x*: 37*x* - 410Sell per month: $590 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 45. Which of the following “geometric factoring models” represents the factoring formula? ​​

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | ​ | b.  | ​ |
|   | c.  | ​​ | d.  | ​ |
|   | e.  | ​​​ |  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 46. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 47. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | (] ​​ |
|   | b.  | (] ​​ |
|   | c.  | (] ​​ |
|   | d.  | (] ​​ |
|   | e.  | (] ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 48. Describe the error.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 49. Find all solutions of the equation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 50. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 51. Use the position equation  , where *s* represents the height of an object (in feet),  represents the initial velocity of the object (in feet per second),  represents the initial height of the object (in feet), and *t* represents the time (in seconds).A projectile is fired straight upward from ground level  with an initial velocity of  160 feet per second. At what instant will it be back at ground level?​

|  |  |  |
| --- | --- | --- |
|   | a.  |  sec |
|   | b.  |  sec |
|   | c.  |  sec |
|   | d.  |  sec |
|   | e.  |  sec |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 52. Use a calculator to find the decimal form of the rational number. If it is a nonterminating decimal, write the repeating pattern.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  | 1 |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 53. Solve the inequality and write the solution set in interval notation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 54. Reduce the index of the radical.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |   |
|   | b.  |   |
|   | c.  |   |
|   | d.  | (*x* + 1)​ |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 55. When two resistors of resistances  and are connected in parallel (see figure), the total resistance *R* satisfies the equation​.  Find  for a parallel circuit in which  ohms and *R* must be at least 1 ohm.​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |   |
|   | d.  |  |
|   | e.  |   |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 56. Solve the absolute value equation below for *x*. ​

|  |  |  |
| --- | --- | --- |
|   | a.  | –19 and –7 |
|   | b.  | –20 and –7 |
|   | c.  | –19 and 12 |
|   | d.  | -20 and 12 |
|   | e.  | –7 and 12 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 57. After 2 years, an investment of $1,100 compounded annually at an interest rate *r* will yield an amount of 1,100(1 + *r*)3. Use a calculator to evaluate the polynomial for the values of *r* shown in the table. (Round the answer to two decimal places.)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *r* | 2% | 3% |  | 4% |  |
| 1,100(1 + *r*)3 |   |   |   |   |   |

What conclusion can you make from the table?​

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|   | a.  | ​

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  *r* | 2%  | 3%  |   | 4%  |   |
| 1,100(1 + *r*)3 | 1,167.33 | 1,202.00 | 1,219.59 | 1,237.35 | 1,255.28 |

The amount decreases with increasing *r*. |
|   | b.  | ​

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  *r* |  2% |  3% |   | 4%  |   |
| 1,100(1 + *r*)3 | 1,255.28 | 1,237.35 | 1,219.59 | 1,202.00 | 1,167.33 |

The amount increases with decreasing *r*. |
|   | c.  | ​

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *r*  | 2%  | 3% |   | 4%  |   |
| 1,100(1 + *r*)3 | 1,255.28 | 1,237.35 | 1,219.59 | 1,202.00 | 1,167.33 |

The amount increases with increasing *r*. |
|   | d.  | ​

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *r* | 2% |  3% |   | 4%  |   |
| 1,100(1 + *r*)3  | 1,167.33 | 1,202.00 | 1,219.59 | 1,237.35 | 1,255.28 |

The amount increases with decreasing *r*. |
|   | e.  | ​

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| *r* | 2%  | 3%  |   |  4% |   |
| 1,100(1 + *r*)3 | 1,167.33 | 1,202.00 | 1,219.59 | 1,237.35 | 1,255.28 |

The amount increases with increasing *r*. |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 58. Write the number in decimal notation.​8.25 × 105​

|  |  |  |
| --- | --- | --- |
|   | a.  | 82,500 |
|   | b.  | 8,250,000 |
|   | c.  | 825 |
|   | d.  | 8,250 |
|   | e.  | 825,000 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 59. Perform the addition or subtraction and write the result in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 13 – 8*i* |
|   | b.  | 12 – 7*i* |
|   | c.  | 9 – 4*i* |
|   | d.  | 11 – 6*i* |
|   | e.  | 10 – 5*i* |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 60. Use inequality notation and interval notation to describe the set.​*y* is no more than 20.​

|  |  |  |
| --- | --- | --- |
|   | a.  | Inequality : *y* ≤ 20Interval : (∞, –20] |
|   | b.  | Inequality : *y* ≤ 20Interval : (–∞, 20] |
|   | c.  | Inequality : *y* ≥ 20Interval : (–∞, 20] |
|   | d.  | Inequality : *y* ≥ 20Interval : (–∞, –20] |
|   | e.  | Inequality : *y* ≤ 20Interval : (∞, 20] |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 61. A rectangular playing field with a perimeter of  94 meters is to have an area of at least 420 square meters. Within what bounds must the length of the rectangle lie?​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 62. A company has determined that the profit *P*, in dollars, it can expect from the manufacture and sale of *x* tennis racquets is given by . How many racquets should the company manufacture and sell to earn a profit of $483,000?​

|  |  |  |
| --- | --- | --- |
|   | a.  | 4600 or 6900 racquets |
|   | b.  | 4600 or 5500 racquets |
|   | c.  | 5500 or 6900 racquets |
|   | d.  | 5100 or 5500 racquets |
|   | e.  | 4600 or 5100 racquets |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 63. Evaluate the expression for the given value of *x.*​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 64. Write the following exponential expression in the simplest form.​ ​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 65. Factor by grouping.​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 66. Use the Quadratic Formula to solve the equation . (Round your answer to three decimal places.)​

|  |  |  |
| --- | --- | --- |
|   | a.  | *x* = –1.349, *x* = 2.025 |
|   | b.  | *x* = 2.174, *x* = –1.281 |
|   | c.  | *x* = 0.707, *x* = 1.930 |
|   | d.  | *x* = 1.973, *x* = –0.628 |
|   | e.  | *x* = –0.434, *x* = 4.075 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 67. Write the quotient in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 68. Solve the following equation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 69. Find all solutions of the equation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 70. Factor the sum or difference of cubes.​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 71. Find real numbers *a* and *b* such that the equation is true.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | *a* = 0, *b* = 5 |
|   | b.  | *a* = 0, *b* =  |
|   | c.  | *a* = 0, *b* =  |
|   | d.  | *a* = 0, *b* = 4 |
|   | e.  | *a* = 0, *b* =  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 72. Find all solutions of the equation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 3 |
|   | b.  | 4 |
|   | c.  | 1 |
|   | d.  | 2 |
|   | e.  | 0 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 73. Solve the quadratic equation by factoring.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 0, 4 |
|   | b.  | 1,  |
|   | c.  | 0,  |
|   | d.  | 0,  |
|   | e.  | 0,  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 74. Find all solutions of the equation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 75. Rationalize the denominator of the following expression and then simplify your answer.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 76. Simplify the expression. ​

|  |  |  |
| --- | --- | --- |
|   | a.  |   |
|   | b.  |   |
|   | c.  |   |
|   | d.  |   |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 77. Complete the following statement using the appropriate symbol.​ \_\_\_\_ ​

|  |  |  |
| --- | --- | --- |
|   | a.  | > |
|   | b.  | = |
|   | c.  | < |
|   | d.  | ≤ |
|   | e.  | ≥ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 78. Find the distance between *a* and *b*.​*a* = 173, *b* = 57​

|  |  |  |
| --- | --- | --- |
|   | a.  | 59 |
|   | b.  | 118 |
|   | c.  | 175 |
|   | d.  | 230 |
|   | e.  | 116 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 79. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 80. Solve:

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 81. Completely factor the difference of two squares.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 82. Factor the difference of cubes.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 83. Solve the inequality and graph the solution on the real number line​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 84. The accounting department of a sports drink bottling company is checking to see whether the actual expenses of a department differ from the budgeted expenses by more than $500 or by more than 5%. Fill in the missing parts of the table, and determine whether each actual expense passes the “budget variance test.”​

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   |  Bubget Expense, *b* |  Actual Expense, *a* |  |*a* – *b*| |  0.05*b* |
| Utilities | $9400 | $9772 |   |   |

​

|  |  |  |
| --- | --- | --- |
|   | a.  | Utilities: |*a* – *b*| = 372, 0.05*b* = 50Because the difference between the actual expense and the budget is less than $500 and greater than 5% of budgeted amount there is compliance with the budget variance test. |
|   | b.  | Utilities: |*a* – *b*| = 372, 0.05*b* = 470Because the difference between the actual expense and the budget is greater than $500 and greater than 5% of budgeted amount there is compliance with the budget variance test. |
|   | c.  | Utilities: |*a* – *b*| = 372, 0.05*b* = 470Because the difference between the actual expense and the budget is less than $500 and less than 5% of budgeted amount there is compliance with the budget variance test. |
|   | d.  | Utilities: |*a* – *b*| = 372, 0.05*b* = 470Because the difference between the actual expense and the budget is $500 and greater than 5% of budgeted amount there is compliance with the budget variance test. |
|   | e.  | Utilities: |*a* – *b*| = 372, 0.05*b* = 470Because the difference between the actual expense and the budget is greater than $500 and less than 5% of budgeted amount there is compliance with the budget variance test. |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 85. Use inequality notation to describe the set.​*q* is at least 6 but less than 22​

|  |  |  |
| --- | --- | --- |
|   | a.  | 6 ≤ *q* ≤ 22 |
|   | b.  | 6 ≤ *q* < 22 |
|   | c.  | 22 ≤ *q* < 6 |
|   | d.  | 22 < *q* ≤ 6 |
|   | e.  | 6 < *q* < 22 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 86. Write the complex number in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  | –  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 87. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 88. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 89. Do the operation and express the answer in *a* + *bi* form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 24 – 2 *i* |
|   | b.  | – 24 + 2 *i* |
|   | c.  | – 2 + 2 *i* |
|   | d.  | 2 – 2 *i* |
|   | e.  | 24 + 2 *i* |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 90. A stream of water moving at the rate of *v* feet per second can carry particles of size  inches. Find the size of the largest particle that can be carried by a stream flowing at the rate of  foot per second. (Round your answer to three decimal places.)​

|  |  |  |
| --- | --- | --- |
|   | a.  | 0.052 |
|   | b.  | 0.072 |
|   | c.  | 0.032 |
|   | d.  | 0.042 |
|   | e.  | 0.062 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 91. The gas mileage *m*, in miles per gallon, obtained during a long trip is given by  where *s* is the speed of the automobile in miles per hour and . At what constant speed can the automobile drive to obtain a gas mileage of exactly 29 miles per gallon?​

|  |  |  |
| --- | --- | --- |
|   | a.  | 33 mph and 43 mph |
|   | b.  | 37 mph and 45 mph |
|   | c.  | 33 mph and 37 mph |
|   | d.  | 43 mph and 45 mph |
|   | e.  | 37 mph and 43 mph |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 92. Evaluate the expression.​| –49 |​

|  |  |  |
| --- | --- | --- |
|   | a.  | –49 |
|   | b.  | 98 |
|   | c.  | 49 |
|   | d.  | –47 |
|   | e.  | –50 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 93. Do the operation and express the answer in *a* + *bi* form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | – 17 + 36*i* |
|   | b.  | 17 + 18*i* |
|   | c.  | – 17 + 18*i* |
|   | d.  | – 17 – 18*i* |
|   | e.  | 17 – 18*i* |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 94. Evaluate the expression below.​3-3​

|  |  |  |
| --- | --- | --- |
|   | a.  |   |
|   | b.  |   |
|   | c.  | 27   |
|   | d.  |   |
|   | e.  | 9 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 95. Find all solutions to the following equation.  ​

|  |  |  |
| --- | --- | --- |
|   | a.  | no solution |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 96. Rewrite the expression with positive exponents and simplify. ​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 97. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 98. Write the complex conjugate of the complex number. Then multiply the number by its complex conjugate.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | –23*i*, 24 |
|   | b.  | *i*, 24 |
|   | c.  | 576*i*, 24 |
|   | d.  | –*i*, 24 |
|   | e.  | –*i*, 24 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 99. Perform the addition and simplify.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 100. Simplify the following radical expression. ​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 101. Write the number in scientific notation.One milligram is about 0.015430 grain.

|  |  |  |
| --- | --- | --- |
|   | a.  | 0.1543 × 10–1 |
|   | b.  | 15.43 × 10–3 |
|   | c.  | 1.543 × 10–2 |
|   | d.  | 1.543 × 10–3 |
|   | e.  | 0.015430 × 10–2 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 102. Perform the division and simplify.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 103. Do the operation and express the answer in *a* + *bi* form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 9*i* |
|   | b.  | – 9*i* |
|   | c.  | – 90*i* |
|   | d.  | – 9 |
|   | e.  | 9 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 104. Perform the following operation.​Multiply  and  .​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 105. Find all solutions of the equation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 106. Perform the operation and write the result in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  + *i* |
|   | b.  |  – *i* |
|   | c.  |  + *i* |
|   | d.  |  *i* |
|   | e.  |  – *i* |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 107. Use a calculator to evaluate the expression. (Round your answer to three decimal places.)​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 6.069 × 107 |
|   | b.  | 6.069 × 108 |
|   | c.  | 8.427 × 106 |
|   | d.  | 8.427 × 108 |
|   | e.  | 8.427 × 107 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 108. Simplify the complex number and write it in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 205,379*i* |
|   | b.  | –59*i* |
|   | c.  | –*i* |
|   | d.  | *i* |
|   | e.  | –205,379*i* |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 109. Write a polynomial that fits the description.​A fifth-degree polynomial with leading coefficient 9.​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 110. Fill in the missing form of the expression.​*Radical Form               Rational Exponent Form**-------*​

|  |  |  |
| --- | --- | --- |
|   | a.  |   |
|   | b.  | 4.5  |
|   | c.  |   |
|   | d.  |   |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 111. Use a calculator to approximate the number. (Round your answer to three decimal places.) ​

|  |  |  |
| --- | --- | --- |
|   | a.  | –2.421 |
|   | b.  | 1006.831 |
|   | c.  | 867.741 |
|   | d.  | 3.678 |
|   | e.  | 6.216 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 112. Find all solutions of the equation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | –1 |
|   | b.  | 0 |
|   | c.  | –3 |
|   | d.  | –2 |
|   | e.  | 1 |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 113. Solve the inequality and graph the solution on the real number line.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | ​​ |
|   | b.  | ​​ |
|   | c.  | ​​ |
|   | d.  | ​​ |
|   | e.  | ​​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 114. Solve the inequality and write the solution set in interval notation.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |   |
|   | b.  |  |
|   | c.  |   |
|   | d.  |   |
|   | e.  | ​ |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 115. Find a polynomial that represents the total number of square feet for the floor plan shown in the figure, *a* = 20 ft and  *b* = 30 ft.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 116. Solve the quadratic equation by factoring.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 0,  |
|   | b.  |  |
|   | c.  | 0,  |
|   | d.  | 1,  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 117. Is the interval bounded or unbounded?​–5 < *x* < –3​

|  |  |  |
| --- | --- | --- |
|   | a.  | bounded |
|   | b.  | unbounded |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 118. Factor the perfect square trinomial.​​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  |  |
|   | d.  |  |
|   | e.  |  |

 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 119. Determine whether the value of  is a solution of the inequality.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | Yes |
|   | b.  | No |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 120. Simplify the complex number and write it in standard form.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 81 |
|   | b.  | –81 |
|   | c.  | 81*i* |
|   | d.  | –81*i* |
|   | e.  | 3*i* |

 |

**Answer Key**

|  |
| --- |
| 1. ​ |

|  |
| --- |
| 2. b |

|  |
| --- |
| 3. a |

|  |
| --- |
| 4. a |

|  |
| --- |
| 5. a |

|  |
| --- |
| 6. d |

|  |
| --- |
| 7. e |

|  |
| --- |
| 8. d |

|  |
| --- |
| 9. d |

|  |
| --- |
| 10. b |

|  |
| --- |
| 11. e |

|  |
| --- |
| 12. a |

|  |
| --- |
| 13. a |

|  |
| --- |
| 14. c |

|  |
| --- |
| 15. a |

|  |
| --- |
| 16. e |

|  |
| --- |
| 17. e |

|  |
| --- |
| 18. c |

|  |
| --- |
| 19. b |

|  |
| --- |
| 20. b |

|  |
| --- |
| 21. a |

|  |
| --- |
| 22. a |

|  |
| --- |
| 23. e |

|  |
| --- |
| 24. d |

|  |
| --- |
| 25. e |

|  |
| --- |
| 26. b |

|  |
| --- |
| 27. d |

|  |
| --- |
| 28. e |

|  |
| --- |
| 29. a |

|  |
| --- |
| 30. a |

|  |
| --- |
| 31. a |

|  |
| --- |
| 32. a |

|  |
| --- |
| 33. d |

|  |
| --- |
| 34. a |

|  |
| --- |
| 35. e |

|  |
| --- |
| 36. e |

|  |
| --- |
| 37. b |

|  |
| --- |
| 38. b |

|  |
| --- |
| 39. a |

|  |
| --- |
| 40. e |

|  |
| --- |
| 41. d |

|  |
| --- |
| 42. a |

|  |
| --- |
| 43. b |

|  |
| --- |
| 44. a |

|  |
| --- |
| 45. b |

|  |
| --- |
| 46. b |

|  |
| --- |
| 47. a |

|  |
| --- |
| 48. d |

|  |
| --- |
| 49. e |

|  |
| --- |
| 50. a |

|  |
| --- |
| 51. b |

|  |
| --- |
| 52. e |

|  |
| --- |
| 53. b |

|  |
| --- |
| 54. c |

|  |
| --- |
| 55. c |

|  |
| --- |
| 56. d |

|  |
| --- |
| 57. e |

|  |
| --- |
| 58. e |

|  |
| --- |
| 59. c |

|  |
| --- |
| 60. b |

|  |
| --- |
| 61. c |

|  |
| --- |
| 62. c |

|  |
| --- |
| 63. c |

|  |
| --- |
| 64. d |

|  |
| --- |
| 65. c |

|  |
| --- |
| 66. c |

|  |
| --- |
| 67. d |

|  |
| --- |
| 68. d |

|  |
| --- |
| 69. a |

|  |
| --- |
| 70. a |

|  |
| --- |
| 71. b |

|  |
| --- |
| 72. d |

|  |
| --- |
| 73. e |

|  |
| --- |
| 74. d |

|  |
| --- |
| 75. a |

|  |
| --- |
| 76. b |

|  |
| --- |
| 77. a |

|  |
| --- |
| 78. e |

|  |
| --- |
| 79. d |

|  |
| --- |
| 80. c |

|  |
| --- |
| 81. c |

|  |
| --- |
| 82. b |

|  |
| --- |
| 83. a |

|  |
| --- |
| 84. c |

|  |
| --- |
| 85. b |

|  |
| --- |
| 86. c |

|  |
| --- |
| 87. a |

|  |
| --- |
| 88. b |

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| --- |
| 89. e |

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| --- |
| 90. c |

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| --- |
| 91. c |

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| --- |
| 92. c |

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| --- |
| 93. e |

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| --- |
| 94. a |

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| --- |
| 95. e |

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| --- |
| 96. d |

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| --- |
| 97. a |

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| --- |
| 98. d |

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| --- |
| 99. a |

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| --- |
| 100. e |

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| --- |
| 101. c |

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| --- |
| 102. b |

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| --- |
| 103. d |

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| --- |
| 104. c |

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| --- |
| 105. c |

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| --- |
| 106. e |

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| --- |
| 107. e |

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| --- |
| 108. c |

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| --- |
| 109. b |

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| --- |
| 110. d |

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| --- |
| 111. d |

|  |
| --- |
| 112. c |

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| --- |
| 113. a |

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| --- |
| 114. e |

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| --- |
| 115. a |

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| --- |
| 116. e |

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| --- |
| 117. a |

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| --- |
| 118. e |

|  |
| --- |
| 119. a |

|  |
| --- |
| 120. a |