|  |  |
| --- | --- |
| **1.** | Which of the points *A*(6, 7) or *B*(5, 8) is closer to the origin? |

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| --- | --- | --- |
| **2.** | Ifis the midpoint of the line segment *AB*, and if *A* has coordinates find the coordinates of *B*. |  |

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| **3.** | Find the *x* and *y*-intercepts of the graph of the equation. |

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| --- | --- |
| **4.** | Find an equation of the circle that has the points *P*(5, 8) and *Q*(9, -6) as the endpoints of a diameter. |

|  |  |
| --- | --- |
| **5.** | Find the center and radius of the circle. |

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| **6.** | Write an equation for the line passing through the point (-1, 2) and the point (3, -4). |

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| **7.** | Write an equation for the line with an *x*-intercept of -4 and *y*-intercept of 16. |

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| **8.** | Write the equation for the line passing through the point (8, -11) and parallel to the line *x* + 2*y* = 8. |

|  |  |
| --- | --- |
| **9.** | Write the equation for the line passing through the point (15, 17) which is perpendicular to the line *y* = 7. |

|  |  |
| --- | --- |
| **10.** | Solve the equation by factoring. |

|  |  |
| --- | --- |
| **11.** | Solve the equation by completing the square. |
| **12.** | Find all real solutions of the equation. |
| **13.** | Use the discriminant to determine the number of real solutions of the equation.  *x*2 - 5.66*x* + 2.52 = 0 |

|  |  |
| --- | --- |
| **14.** | Evaluate the expression (5 + 10*i*)(7 - 9*i*) and write the result in the form *a + bi*. |

|  |  |
| --- | --- |
| **15.** | Evaluate the expression  and write the result in the form *a + bi*. |

|  |  |
| --- | --- |
| **16.** | Evaluate the expression and write the result in the form *a + bi*. |

|  |  |
| --- | --- |
| **17.** | Find all solutions of the equation and express them in the form *a + bi*. |

|  |  |
| --- | --- |
| **18.** | Find all real solutions of the equation.  *x* 4 = 4*x* 2 |
|  |
| **19.** | Find all real solutions of the equation. |

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| --- | --- |
| **20.** | Find all real solutions of the equation. |

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| **21.** | A jeweler has three small solid spheres made of gold, of radius 1 mm, 2 mm, and 3 mm. He decides to melt these down and make just one sphere out of them. What will the radius of this larger sphere be? Round the answer to one decimal place. |

|  |  |
| --- | --- |
| **22.** | Solve the inequality. Express the solution using interval notation. |

|  |  |  |  |  |  |  |  |
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| **23.** | A car rental company offers two plans for renting a car.   |  |  |  | | --- | --- | --- | |  | Plan A: | $40 per day and $0.20 per mile. | |  | Plan B: | $60 per day with free unlimited mileage. |   For what range of miles will plan B save you money? |

|  |  |
| --- | --- |
| **24.** | Solve the inequality. Express the solution using interval notation. |
| **25.** | Solve the equation. |

|  |  |  |
| --- | --- | --- |
| **1.** | | A |
| **2.** | |  |
| **3.** | | 7, -7/3 |
| **4.** | |  |
| **5.** | | Center (1/2, 1/2), |
| **6.** | |  |
|  | |
| **7.** | |  |
|  | |
| **8.** | |  |
| **9.** | |  |
| **10.** | |  |
|  | |
| **11.** | |  |
|  | |
| **12.** | |  |
|  | |
| **13.** | | 2 |
| **14.** | |  |
| **15.** | |  |
| **16.** | |  |
| **17.** | |  |
| **18.** | |  |
| **19.** | | 8,56 |
| **20.** | | 14 |
| **21.** | |  |
|  | |
| **22.** | |  |
|  | |
| **23.** | |  |
| **24.** | |  |
|  | |
| **25.** |  |  |

|  |  |
| --- | --- |
| **1.** | Find the equation of the circle with radius 4 and center (2, 3). |

|  |  |
| --- | --- |
| **2.** | Write the equation for the line passing through the point (8,-11) and parallel to the line *x* + 2*y* = 8. |

|  |  |
| --- | --- |
| **3.** | Write an equation that expresses that *R* is proportional to the square root of *y*. |

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| --- | --- |
| **4.** | Solve the equation by factoring. |

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| --- | --- |
| **5.** | Find all real solutions of the equation. |

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| **6.** | Find all real solutions of the equation.  *x* 4 = 4*x* 2 |

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| --- | --- |
| **7.** | Find all real solutions of the equation. |

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| --- | --- |
| **8.** | Find all real solutions of the equation. |

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| --- | --- |
| **9.** | Evaluate the expression and write the result in the form *a + bi*. |

|  |  |
| --- | --- |
| **10.** | Solve the equation for. |

|  |  |
| --- | --- |
| **11.** | Solve the equation. |

|  |  |
| --- | --- |
| **12.** | Solve the inequality. Express the answer using interval notation. |

|  |  |
| --- | --- |
| **13.** | What quantity of a 40% acid solution must be mixed with a 10% solution to produce 300 mL of a 30% solution? |

|  |  |
| --- | --- |
| **14.** | Use the discriminant to determine the number of real solutions of the equation.  *x*2 - 5.66*x* + 2.52 = 0 |

|  |  |
| --- | --- |
| **15.** | Solve the equation by completing the square. |

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| **16.** | An executive in an engineering firm earns a monthly salary plus a Christmas bonus of $8,900. If she earns a total of $96,500 per year, what is her monthly salary? |

|  |  |
| --- | --- |
| **17.** | A jeweler has three small solid spheres made of gold, of radius 1 mm, 2 mm, and 3 mm. He decides to melt these down and make just one sphere out of them. What will the radius of this larger sphere be? Round the answer to one decimal place. |

|  |  |
| --- | --- |
| **18.** | Evaluate the expression  and write the result in the form *a + bi*. |
|  |
| **19.** | Al paints with watercolors on a sheet of paper 22 inches wide by 17 inches high. He then places this sheet on a mat so that a uniformly wide strip of the mat shows all around the picture. The perimeter of the mat is 102 inches. How wide is the strip of the mat showing around the picture? |

|  |  |
| --- | --- |
| **20.** | A pasture is four times as long as it is wide. Its area is. How wide is the pasture? |

|  |  |
| --- | --- |
| **21.** | Using calculus, it can be shown that if a ball is thrown upward with an initial velocity of 16 ft/s from the top of a building 256 ft high, then its height *h* above the ground *t* seconds later will be . During what time interval will the ball be at least 64 ft above the ground |

|  |  |
| --- | --- |
| **22.** | Evaluate the expression (5 + 10*i*)(7 - 9*i*) and write the result in the form *a + bi*. |

|  |  |
| --- | --- |
| **23.** | Find all solutions of the equation  and express them in the form *a + bi*. |

|  |  |
| --- | --- |
| **24.** | Solve the equation.  5*x* - 3 = 6*x* + 4 |

|  |  |
| --- | --- |
| **25.** | Solve the inequality. Express the solution using interval notation. |

|  |  |
| --- | --- |
| **1.** |  |
| **2.** |  |
| **3.** |  |
| **4.** |  |
|  |
| **5.** |  |
|  |
| **6.** |  |
| **7.** | 8, 56 |
| **8.** | 14 |
| **9.** |  |
| **10.** |  |
| **11.** |  |
|  |
| **12.** |  |
|  |
| **13.** |  |
| **14.** | 2 |
| **15.** |  |
|  |
| **16.** | $7,300 |
| **17.** |  |
|  |
| **18.** |  |
| **19.** | 3 |
| **20.** | 240 ft |
|  |
| **21.** |  |
|  |
| **22.** |  |
| **23.** |  |
| **24.** | -7 |
| **25.** |  |
|  |



|  |  |
| --- | --- |
| **1.** | Determine which point *A*(2, 3) or *B*(1, 4) is closer to the origin?  (a) Point *A*(2, 3) is closer to the origin.  (b) Point *B*(1, 4) is closer to the origin. |

|  |  |
| --- | --- |
| **2.** | If *M*(3, 4) is the midpoint of the line segment *AB*, and if *A* has coordinates (1, 2), find the coordinates of *B.*  (a) (-3, -5) (b) (-5, 6) (c) (-5, -4) (d) (5, 6) (e) (5, -6) |

|  |  |
| --- | --- |
| **3.** | Find the *x*- and *y*-intercepts of the graph of the equation.    (a)  (b)  (c)  (d)  (e) |

|  |  |
| --- | --- |
| **4.** | Find the center and radius of the circle.    (a) center ( -4, 2 ), radius 1  (b) center ( 2, 4 ), radius 1  (c) center ( -2, 3 ), radius 1  (d) center ( -2, -4 ), radius 1  (e) center ( 4, -2 ), radius 1 |

|  |  |
| --- | --- |
| **5.** | Determine the correct equation for the line passing through the point (2, 22) with a slope of 7.  (a)  (b)  (c)  (d)  (e) |

|  |  |  |
| --- | --- | --- |
| **6.** | Determine the correct equation for the line passing through the point (5,-8) and parallel to the line *x* + 5*y* = 20.  (a)  (b)  (c)  (d)  (e) |  |

|  |  |  |
| --- | --- | --- |
| **7.** | Determine the equation that expresses *B* is proportional to *R* and inversely proportional to *t*.  Symbols *a*, *b*, and *c* are constants.  (a)  (b)  (c)  (d)  (e) |  |

|  |  |
| --- | --- |
| **8.** | Solve the equation by factoring.    (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **9.** | Solve the equation by completing the square.    (a) *x* = -9, *x* = -4 (b) *x* = 9, *x* = -4 (c) *x* = -9, *x* = -8 (d) *x* = 9, *x* = 4 (e) none of these |

|  |  |
| --- | --- |
| **10.** | Solve the inequality.    (a)  (b)  (c)  (d)  (e) |

|  |  |
| --- | --- |
| **11.** | Find all real solutions of the equation.    (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **12.** | Use the discriminant to determine the number of real solutions of the equation.  *x*2 - 5.79*x* + 2.37 = 0  (a) no real solutions  (b) exactly one real solution  (c) two real solutions  (d) more than two real solutions  (e) none of these |

|  |  |
| --- | --- |
| **13.** | Evaluate the expression (4 + 7*i*)(11 - 4*i*) and write the result in the form *a + bi*.  (a) 72 + 61*i*  (b) 44 + 77*i*  (c) 61 + 72*i*  (d) - 61 - 72*i*  (e) none of these |

|  |  |
| --- | --- |
| **14.** | Evaluate the expression  and write the result in the form *a + bi*.  (a) 4 + 5*i*  (b) 4 - 5*i*  (c) - 5 - 4*i*  (d) 5 + 4*i*  (e) none of these |
|  |

|  |  |
| --- | --- |
| **15.** | Evaluate the expression  and write the result in the form *a + bi*.  (a) -1 (b) 1 (c) i (d) *-i*  (e) none of these |
|  |

|  |  |
| --- | --- |
| **16.** | Find all solutions of the equationand express them in the form *a + bi*.  (a) *x* = 3 + 2*i*, *x* = 3 - 2*i*  (b) *x* = 1 + 3*i*, *x* = 1 - 3*i*  (c) *x* = 1, *x* = - 1  (d) *x* = 4 + 12*i*, *x* = 4 - 12*i*  (e) no solutions |
|  |

|  |  |
| --- | --- |
| **17.** | Find all real solutions of the equation.  *x* 4 = 16*x* 2  (a) *x* = 0, *x* = 4, *x* = -4  (b) *x* = 0  (c) *x* = 0, *x* = 16, *x* = -16  (d) *x* = 0, *x* = 16  (e) none of these |

|  |  |
| --- | --- |
| **18.** | Find all real solutions of the equation.    (a) *x* = 0, *x* = 20 (b) *x* = 5, *x* = 20 (c) *x* = 0, *x* = -25 (d) *x* = 20, *x* = 80 (e) none of these |

|  |  |
| --- | --- |
| **19.** | Find all real solutions of the equation.    (a) 0 (b) 0, 11 (c) 11 (d) 1, 0 (e) -11 |

|  |  |
| --- | --- |
| **20.** | Grain is falling from a chute onto the ground, forming a conical pile whose diameter is always three times its height. How high is the pile (to the nearest hundredth of a foot) when it contains  of grain?  (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **21.** | Solve the inequality.    (a) ( -4, 2 ) (b) [ -4, 2 ] (c) [ -2, 4 ) (d) [ -4, 2 ) (e) [ -2, 4 ] |

|  |  |
| --- | --- |
| **22.** | Solve the nonlinear inequality.        (a)    (b)    (c)    (d)    (e) |

|  |  |
| --- | --- |
| **23.** | In the vicinity of a bonfire the temperature *T* in at a distance of *x* meters from the center of the fire was given by . At what range of distances from the fire’s center was the temperature less than 400?  (a)  (b)  (c)  (d)  (e) none of these |
|  |

|  |  |
| --- | --- |
| **24.** | Solve the equation.    (a)  (b)  (c)  (d)  (e) |

|  |  |
| --- | --- |
| **25.** | Solve the inequality.    (a)  (b)  (c)  (d)  (e) |

|  |  |
| --- | --- |
| **1.** | b |
| **2.** | d |
| **3.** | d |
| **4.** | b |
| **5.** | b |
| **6.** | b |
| **7.** | c |
| **8.** | d |
| **9.** | b |
| **10.** | c |
| **11.** | d |
| **12.** | c |
| **13.** | a |
| **14.** | a |
| **15.** | d |
| **16.** | b |
| **17.** | a |
| **18.** | b |
| **19.** | c |
| **20.** | e |
| **21.** | b |
| **22.** | a |
| **23.** | d |
| **24.** | c |
| **25.** | b |

|  |  |
| --- | --- |
| **1.** | Evaluate the expression  and write the result in the form *a + bi*.  (a) -1  (b) 1  (c) *i*  (d) *- i*  (e) none of these |
|  |

|  |  |
| --- | --- |
| **2.** | Solve the inequality.    (a) ( -4, 2 ) (b) [ -4, 2 ] (c) [ -2, 4 ) (d) [ -4, 2 ) (e) [ -2, 4 ] |

|  |  |
| --- | --- |
| **3.** | Caitlin paints with watercolors on a sheet of paper 28 inches wide by 16 inches high. She then places this sheet on a mat so that a uniformly wide strip of the mat shows all around the picture. The perimeter of the mat is 112 inches. How wide is the strip of the mat showing around the picture?    (a) 8 inches (b) 4 inches (c) 6 inches (d) 2 inches (e) 3 inches |

|  |  |
| --- | --- |
| **4.** | Solve the nonlinear inequality.        (a)    (b)  (c)  (d)  (e) |
| **5.** | Find all solutions of the equationand express them in the form *a + bi*.  (a) *x* = 3 + 2*i*, *x* = 3 - 2*i*  (b) *x* = 1 + 3*i*, *x* = 1 - 3*i*  (c) *x* = 1, *x* = - 1  (d) *x* = 4 + 12*i*, *x* = 4 - 12*i*  (e) no solutions |
|  |
| **6.** | Find all real solutions of the equation.    (a) 0 (b) 0, 11 (c) 11 (d) 1, 0 (e) -11 |

|  |  |
| --- | --- |
| **7.** | Solve the equation.    (a) - 12 (b) 12 (c) 144 (d) 6 (e) 10 |

|  |  |
| --- | --- |
| **8.** | Use the discriminant to determine the number of real solutions of the equation.  *x*2 - 5.79*x* + 2.37 = 0  (a) no real solutions  (b) exactly one real solution  (c) two real solutions  (d) more than two real solutions  (e) none of these |
| **9.** | Evaluate the expression (4 + 7*i*)(11 - 4*i*) and write the result in the form *a + bi*.  (a) 72 + 61*i*  (b) 44 + 77*i*  (c) 61 + 72*i*  (d) -61 - 72*i*  (e) none of these |

|  |  |
| --- | --- |
| **10.** | Solve the equation.  3(*x* + 11) + 1 = - 3(*x* + 5) + 7  (a) 3 (b) - 7 (c) 10 (d) 7 (e) - 18 |

|  |  |
| --- | --- |
| **11.** | What quantity of a 50% acid solution must be mixed with a 20% solution to produce 300 mL of a 40% solution?  (a) 100 mL  (b) 180 mL  (c) 120 mL  (d) 240 mL  (e) 200 mL |
| **12.** | Solve the inequality.    (a)  (b)  (c)  (d)  (e) |
| **13.** | Solve the equation by completing the square.    (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **14.** | Find all real solutions of the equation.    (a) *x* = 0, *x* = 20 (b) *x* = 5, *x* = 20 (c) *x* = 0, *x* = -25 (d) *x* = 20, *x* = 80 (e) none of these |

|  |  |
| --- | --- |
| **15.** | Solve the inequality.    (a)  (b)  (c)  (d)  (e) |

|  |  |
| --- | --- |
| **16.** | Find all real solutions of the equation.  *x* 4 = 16*x* 2  (a) *x* = 0, *x* = 4, *x* = -4  (b) *x* = 0  (c) *x* = 0, *x* = 16, *x* = -16  (d) *x* = 0, *x* = 16  (e) none of these |
| **17.** | A jeweler has three small solid spheres made of gold, of radius 1 mm, 2 mm, and 3 mm. He decides to melt these down and make just one sphere out of them. What will the radius of this larger sphere be? Round the answer to one decimal place.  (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **18.** | The average daily food consumption *F* of a herbivorous mammal with body weight *x*, where both *F* and *x* are measured in pounds, is given approximately by the equation . Find the weight *x* of an elephant that consumes 400 lb of food per day.  (a) 15,000 lb  (b) 20,000 lb  (c) 10,000 lb  (d) 5,000 lb  (e) none of these |

|  |  |
| --- | --- |
| **19.** | Solve the equation.    (a)  (b)  (c)  (d)  (e) |

|  |  |
| --- | --- |
| **20.** | Using calculus, it can be shown that if a ball is thrown upward with an initial velocity of 16 ft/s from the top of a building 256 ft high, then its height *h* above the ground *t* seconds later will be . During what time interval will the ball be at least 64 ft above the ground?  (a)  (b)  (c)  (d)  (e) |

|  |  |
| --- | --- |
| **21.** | Find all real solutions of the equation.    (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **22.** | Determine which of the given choices is a solution of the equation.    (a) 1  (b) -1  (c) 0  (d) 2  (e) none of these |

|  |  |
| --- | --- |
| **23.** | Solve the equation by factoring.    (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **24.** | Solve the equation for.      (a)  (b)  (c)  (d)   (e) none of these |

|  |  |
| --- | --- |
| **25.** | Evaluate the expression  and write the result in the form *a + bi*.  (a) 4 + 5*i*  (b) 4 - 5*i*  (c) - 5 - 4*i*  (d) 5 + 4*i*  (e) none of these |
|  |

|  |  |
| --- | --- |
| **1.** | d |
| **2.** | b |
| **3.** | e |
| **4.** | a |
| **5.** | b |
| **6.** | c |
| **7.** | d |
| **8.** | c |
| **9.** | a |
| **10.** | b |
| **11.** | e |
| **12.** | b |
| **13.** | d |
| **14.** | b |
| **15.** | c |
| **16.** | a |
| **17.** | e |
| **18.** | c |
| **19.** | c |
| **20.** | c |
| **21.** | d |
| **22.** | b |
| **23.** | d |
| **24.** | e |
| **25.** | a |

|  |  |
| --- | --- |
| **1.** | If *M*(3, 4) is the midpoint of the line segment *AB*, and if *A* has coordinates (1, 2), find the coordinates of *B.*  (a) (-3, -5) (b) (-5, 6) (c) (-5, -4) (d) (5, 6) (e) (5, -6) |

|  |  |
| --- | --- |
| **2.** | Find an equation of the circle that has the points *P*(5, 8) and *Q*(9, -6) as the endpoints of a diameter. |

|  |  |
| --- | --- |
| **3.** | Find the center and radius of the circle. |

|  |  |
| --- | --- |
| **4.** | Determine the correct equation for the line passing through the point (2,22) with a slope of 7.  (a)  (b)  (c)  (d)  (e) |

|  |  |
| --- | --- |
| **5.** | Write the equation for the line passing through the point (15,17) which is perpendicular to the line *y* = 7. |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **6.** | Find the slope and y-intercept for the line *x* + *y* = 7 and draw its graph.   |  |  | | --- | --- | | (a)    *m* = -2, *y* = 0 | (b)    *m* = -1, *y* = 0 | | (c)    *m* = 1, *y* = 7 | (d)    *m* = -1, *y* = 7 | |

|  |  |
| --- | --- |
| **7.** | The stopping distance *D* of a car after the brakes have been applied varies directly as the square of the speed *s*. A certain car traveling at 50 mi/h can stop in 240 ft. What is the maximum speed it can be traveling if it needs to stop in 150 ft? Round your answer to one decimal place. |

|  |  |
| --- | --- |
| **8.** | Solve the equation by factoring.    (a)  (b)  (c)  (d)  (e) none of these |
| **9.** | Solve the equation by completing the square.    (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **10.** | Find all real solutions of the equation.    (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
| --- | --- |
| **11.** | Use the discriminant to determine the number of real solutions of the equation.  *x*2 - 5.66*x* + 2.52 = 0 |

|  |  |
| --- | --- |
| **12.** | Evaluate the expression (4 + 7*i*)(11 - 4*i*) and write the result in the form *a + bi*.  (a) 61 + 72*i*  (b) 44 + 77*i*  (c) 72 + 61*i*  (d) - 61 - 72*i*  (e) none of these |
| **13.** | Evaluate the expression  and write the result in the form *a + bi*. |

|  |  |
| --- | --- |
| **14.** | Evaluate the expression  and write the result in the form *a + bi*.  (a) - ( *- i* ) (b) *- i*  (c) 1 (d) -1 (e) none of these |
|  |

|  |  |
| --- | --- |
| **15.** | Find all solutions of the equation  and express them in the form *a + bi*. |

|  |  |
| --- | --- |
| **16.** | Find all real solutions of the equation  *x* 4 = 16*x* 2  (a) *x* = 0  (b) *x* = 0, *x* = 4, *x* = -4  (c) *x* = 0, *x* = 16  (d) *x* = 0, *x* = 16, *x* = -16  (e) none of these |

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| **17.** | Find all real solutions of the equation |

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| **18.** | Find all real solutions of the equation    (a) -11 (b) 0, 11 (c) 11 (d) 1, 0 (e) 0 |

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| **19.** | A jeweler has three small solid spheres made of gold, of radius 1 mm, 2 mm, and 3 mm. He decides to melt these down and make just one sphere out of them. What will the radius of this larger sphere be? Round the answer to one decimal place. |

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| **20.** | Solve the inequality. Express the solution using interval notation.    (a) [ -4, 2 ) (b) ( -4, 2 ) (c) [ -2, 4 ] (d) [ -2, 4 ) (e) [ -4, 2 ] |

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| **21.** | A car rental company offers two plans for renting a car.   |  |  |  | | --- | --- | --- | |  | Plan A: | $40 per day and $0.20 per mile. | |  | Plan B: | $60 per day with free unlimited mileage. |   For what range of miles will plan B save you money? |

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| **22.** | Solve the equation.    (a)  (b)  (c)  (d)  (e) |

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| **23.** | Solve the equation. |
| **24.** | Solve the inequality.    (a)  (b)  (c)  (d)  (e) |

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| **25.** | In the vicinity of a bonfire the temperature *T* in at a distance of *x* meters from the center of the fire was given by . At what range of distances from the fire’s center was the temperature less than 400? |
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| **1.** | d |
| **2.** |  |
| **3.** |  |
| **4.** | b |
| **5.** |  |
| **6.** | d |
| **7.** | 39.5 mi/hr |
| **8.** | d |
| **9.** | d |
| **10.** | d |
| **11.** | 2 |
| **12.** | c |
| **13.** |  |
| **14.** | b |
| **15.** |  |
| **16.** | b |
| **17.** | 8, 56 |
| **18.** | c |
| **19.** |  |
| **20.** | e |
| **21.** |  |
| **22.** | d |
| **23.** |  |
|  |
| **24.** | b |
| **25.** |  |
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| **1.** | Joshua paints with watercolors on a sheet of paper 28 inches wide by 16 inches high. He then places this sheet on a mat so that a uniformly wide strip of the mat shows all around the picture. The perimeter of the mat is 112 inches. How wide is the strip of the mat showing around the picture?    (a) 2 inches (b) 8 inches (c) 3 inches (d) 6 inches (e) 4 inches |

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| **2.** | Solve the equation.  |*x* + 19| = |4*x* + 7| |

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| **3.** | A car rental company offers two plans for renting a car.   |  |  |  | | --- | --- | --- | |  | Plan A: | $40 per day and $0.20 per mile. | |  | Plan B: | $60 per day with free unlimited mileage. |   For what range of miles will plan B save you money? |

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| **4.** | A pasture is four times as long as it is wide. Its area is. How long is the pasture? |

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| **5.** | Evaluate the expression  and write the result in the form *a + bi*. |

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| **6.** | Use the discriminant to determine the number of real solutions of the equation.  *x*2 - 5.66*x* + 2.52 = 0 |

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| **7.** | Evaluate the expression (4 + 7*i*)(11 - 4*i*) and write the result in the form *a + bi*.  (a) 61 + 72*i*  (b) 44 + 77*i*  (c) 72 + 61*i*  (d) - 61 - 72*i*  (e) none of these |

|  |  |
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| **8.** | A jeweler has three small solid spheres made of gold, of radius 1 mm, 2 mm, and 3 mm. He decides to melt these down and make just one sphere out of them. What will the radius of this larger sphere be? Round the answer to one decimal place. |

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| **9.** | What quantity of a 40% acid solution must be mixed with a 10% solution to produce 300 mL of a 30% solution? |

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| **10.** | Find all real solutions of the equation. |
| **11.** | Solve the equation.  5*x* - 3 = 6*x* + 4 |

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| **12.** | Find all real solutions of the equation |

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| **13.** | Solve the equation.  3(*x* + 11) + 1 = - 3(*x* + 5) + 7  (a) - 18 (b) 7 (c) 3 (d) 10 (e) - 7 |

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| **14.** | Solve the equation by completing the square.    (a)  (b)  (c)  (d)  (e) none of these |

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| **15.** | Solve the equation by factoring.    (a)  (b)  (c)  (d)  (e) none of these |

|  |  |
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| **16.** | Solve the equation. |

|  |  |
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| **17.** | Evaluate the expression  and write the result in the form *a + bi*.  (a)  (b)  (c)  (d)  (e) none of these |
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| **18.** | Solve the inequality.    (a)  (b)  (c)  (d)  (e) |
| **19.** | Solve the inequality. Express the solution using interval notation.    (a) [ -4, 2 ) (b) ( -4, 2 ) (c) [ -2, 4 ] (d) [ -2, 4 ) (e) [ -4, 2 ] |

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| **20.** | The average daily food consumption *F* of a herbivorous mammal with body weight *x*, where both *F* and *x* are measured in pounds, is given approximately by the equation . Find the weight *x* of an elephant that consumes 200 lb of food per day. |

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| **21.** | Find all solutions of the equation  and express them in the form *a + bi*. |

|  |  |
| --- | --- |
| **22.** | Solve the inequality. |

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| --- | --- |
| **23.** | Solve the equation for.      (a)  (b)  (c)  (d)   (e) none of these |

|  |  |
| --- | --- |
| **24.** | Find all real solutions of the equation    (a) -11 (b) 0, 11 (c) 11 (d) 1, 0 (e) 0 |

|  |  |
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| **25.** | Find all real solutions of the equation  *x* 4 = 16*x* 2  (a) *x* = 0  (b) *x* = 0, *x* = 4, *x* = -4  (c) *x* = 0, *x* = 16  (d) *x* = 0, *x* = 16, *x* = -16  (e) none of these |

|  |  |
| --- | --- |
| **1.** | c |
| **2.** |  |
|  |
| **3.** |  |
| **4.** | 960 ft |
|  |
| **5.** |  |
| **6.** | 2 |
| **7.** | c |
| **8.** |  |
| **9.** |  |
| **10.** |  |
| **11.** | -7 |
| **12.** | 8, 56 |
| **13.** | e |
| **14.** | d |
| **15.** | e |
| **16.** | 11 |
| **17.** | b |
| **18.** | b |
| **19.** | e |
| **20.** | 10,000 lb |
| **21.** |  |
| **22.** |  |
| **23.** | e |
| **24.** | c |
| **25.** | b |

