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| 1. Determine whether the statement is true or false.  ​  ​The circle with equation   lies inside the circle with equation provided .   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 2. Determine whether the statement is true or false.​  The point ( -*n*, 0*b*) is symmetric to the point (*n*, 0*b*) with respect to the *y*-axis.   |  |  |  | | --- | --- | --- | |  | a. | True | |  | b. | False |  |  |  | | --- | --- | | *ANSWER:* | True | | *POINTS:* | 1 | | *QUESTION TYPE:* | True / False | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 3. Ivan wishes to determine which antenna he should purchase for his home. The TV store has supplied him with the information:   |  |  |  |  | | --- | --- | --- | --- | | **Range in Miles** |  |  | | | VHF | UHF | Model | Price | | 30 | 20 | A | $40 | | 45 | 35 | B | $50 | | 60 | 40 | C | $60 | | 75 | 55 | D | $70 |   ​  Ivan wishes to receive Channel 17 (VHF) that is located 22 mi east and 41 mi north of his home and Channel 38 (UHF) that is located 24 mi south and 44 mi west of his home. Which model will allow him to receive both channels at the least cost? (Assume that the terrain between Ivan's home and both broadcasting stations is flat.)   |  |  |  | | --- | --- | --- | |  | a. | Model A | |  | b. | Model C | |  | c. | Model D | |  | d. | Model B |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 4. Find an equation of the circle that satisfies the conditions.  ​  Center and passes through  .  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 5. Find the coordinates of the points that are 10 units away from the origin and have an *x*-coordinate equal to 8.  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. | and | |  | d. | and | |  | e. | and |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 6. Find the distance between the points   and .  ​   |  |  |  | | --- | --- | --- | |  | a. | 11 | |  | b. |  | |  | c. | 61 | |  | d. |  | |  | e. | 37 |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 7. A furniture store offers free setup and delivery services to all points within a 23-mi radius of its warehouse distribution center. If you live 19 mi east and 14 mi south of the warehouse, will you incur a delivery charge?  ​   |  |  |  | | --- | --- | --- | |  | a. | No | |  | b. | Yes |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 8. Ship *A* leaves port sailing north at a speed of 25 mph. A half hour later, ship *B* leaves the same port sailing east at a speed of 16 mph. Let *t* (in hours) denote the time ship *B* has been at sea. Find an expression in terms of *t* giving the distance between the two ships and use this expression to find the distance between the two ships 3 hours after ship *A* has left port. Round the answer to the nearest tenth.  ​   |  |  |  | | --- | --- | --- | |  | a. | 86.0 mi | |  | b. | 78.0 mi | |  | c. | 83.5 mi | |  | d. | 83.0 mi | |  | e. | 85.0 mi |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 9. Plot point (8, –7) on the set of coordinate axes.  ​   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  | a. |  | b. |  | |  | c. |  | d. |  | |  | e. |  |  |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 10. Two ships leave port at the same time. Ship *A* sails north at a speed of 24 mph while ship *B* sails east at a speed of 36 mph.  ​  a. Find an expression in terms of the time *t* (in hours) giving the distance between the two ships.  b. Using the expression obtained in part (a), find the distance between the two ships 1 hr after leaving port. Round the answer to the nearest tenth.  ​   |  |  |  | | --- | --- | --- | |  | a. | and 43.3 | |  | b. | and 47.3 | |  | c. | and 43.3 | |  | d. | and 39.3 | |  | e. | and 39.3 |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 11. The circle with equation   lies out side the circle with equation   means.  ​   |  |  |  | | --- | --- | --- | |  | a. | k ≥ 1 | |  | b. | k > 1 | |  | c. | k < 1 | |  | d. | k ≤ 1 | |  | e. | these curves are intersecting |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 12. A grand tour of four cities begins at city *A* and makes successive stops at cities *B*, *C*, and *D* before returning to city *A*. If the cities are located as shown in the following figure, find the total distance covered on the tour.  ​  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | 2,300 mi | |  | b. | 2,200 mi | |  | c. | 2,100 mi | |  | d. | 2,000 mi | |  | e. | 1,600 mi |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 13. Find an equation of the circle with center at (-*a*, 0*a*) and radius 5*a*.  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 14. Find an equation of the circle with center at the origin that passes through (2, 1).  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 15. Find an equation of the circle with radius 2 and center (–3, –5).  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 16. Find the coordinates of the points that are 5 units away from the origin and have a *y*-coordinate equal to –3.  ​   |  |  |  | | --- | --- | --- | |  | a. | and | |  | b. | and | |  | c. | and | |  | d. | and | |  | e. | and |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 17. Refer to the following figure and determine the coordinates of point  and the quadrant in which it is located.  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | (3, –4) and first quadrant | |  | b. | (2, –2) and first quadrant | |  | c. | (2, –2) and fourth quadrant | |  | d. | (–4, 0) and fourth quadrant | |  | e. | (3, –4) and fourth quadrant |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 18. Find the distance between the points (–2, –3) and (6, 10).  ​   |  |  |  | | --- | --- | --- | |  | a. |  | |  | b. |  | |  | c. |  | |  | d. |  | |  | e. |  |  |  |  | | --- | --- | | *ANSWER:* | a | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 19. Refer to the following figure. Which point has an *x*-coordinate that is equal to zero?  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | C | |  | b. | A | |  | c. | B | |  | d. | E | |  | e. | F |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 20. Refer to the following figure. Which point has a *y*-coordinate that is equal to zero?  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | G | |  | b. | B | |  | c. | E | |  | d. | C | |  | e. | A |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 21. Refer to the following figure. Which points have a negative *x*-coordinate and a negative *y*-coordinate?  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | B | |  | b. | D, F | |  | c. | E, A | |  | d. | G, C | |  | e. | A, C, B |  |  |  | | --- | --- | | *ANSWER:* | b | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 22. Refer to the following figure. Which points have negative *y*-coordinates?  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | E, B, C | |  | b. | A, B, D | |  | c. | F, A, E, C | |  | d. | F, A, D, G | |  | e. | G, D, B |  |  |  | | --- | --- | | *ANSWER:* | e | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 23. Refer to the following figure. Which point has coordinates (-3, 4)?  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | D | |  | b. | G | |  | c. | C | |  | d. | A | |  | e. | B |  |  |  | | --- | --- | | *ANSWER:* | c | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 24. Refer to the following figure. What are the coordinates of point B?  ​  ​   |  |  |  | | --- | --- | --- | |  | a. | (10, -6) | |  | b. | (14, 14) | |  | c. | (4, 10) | |  | d. | (-3, 3) | |  | e. | (-9, -13) |  |  |  | | --- | --- | | *ANSWER:* | d | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Choice | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 25. Determine which statements are true.  ​   |  |  |  | | --- | --- | --- | |  | a. | The point (-(*a)*, (*b*)) is symmetric to the point (0(*a*), (*b*)) with respect to the origin. | |  | b. | The point (-(*a*), 0(*b*)) is symmetric to the point (0(*a*), -(*b*)) with respect to the origin. | |  | c. | The point ((*a*), -(*b*)) is symmetric to the point ((*a*), 0(*b*)) with respect to the *x*-axis. | |  | d. | The point (-(*a*), 0(*b*)) is symmetric to the point (0(*a*), -(*b*)) with respect to the *y*-axis. | |  | e. | The point (-(*a*), (*b*)) is symmetric to the point (0(*a*), (*b*)) with respect to the *y*-axis. |  |  |  | | --- | --- | | *ANSWER:* | b, c, e | | *POINTS:* | 1 | | *QUESTION TYPE:* | Multiple Response | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/28/2015 2:12 AM | |

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| 26. A grand tour of four cities begins at city *A* and makes successive stops at cities *B*, *C*, and *D* before returning to city *A*. If the cities are located as shown in the following figure, find the total distance covered on the tour.  ​  ​  ​  \_\_\_\_\_\_\_\_\_\_mi   |  |  | | --- | --- | | *ANSWER:* | 1,800 | | *POINTS:* | 1 | | *QUESTION TYPE:* | Numeric Response | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 27. Find the distance between the points  and .   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 28. Find the coordinates of the points that are 13 units away from the origin and have an *x*-coordinate equal to 5.   |  |  | | --- | --- | | *ANSWER:* | (5,12), (5,-12) | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 29. Find an equation of the circle that satisfies the conditions.  ​  Center  and passes through .   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 30. Find an equation of the circle with center at (-*a*, 0*a*) and radius 2*a*.   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 31. Find an equation of the circle with center at the origin that passes through (1, 2).   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 32. Find an equation of the circle with radius 5 and center (1, 1).   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 33. Refer to the following figure. Which points have a negative *x*-coordinate and a negative *y*-coordinate?  ​   |  |  | | --- | --- | | *ANSWER:* | G, E, B | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 34. Refer to the following figure. Which points have negative *y*-coordinates?  ​   |  |  | | --- | --- | | *ANSWER:* | E, F, B, A | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 35. Refer to the following figure. Which point has coordinates (-8, 3)?  ​   |  |  | | --- | --- | | *ANSWER:* | B | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 36. Refer to the following figure. What are the coordinates of point C?  ​   |  |  | | --- | --- | | *ANSWER:* | (-6, 3) | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 37. Find the coordinates of the points that are 5 units away from the origin and have a *y*-coordinate equal to –3.   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 38. Refer to the following figure. Which point has a *y*-coordinate that is equal to zero?  ​   |  |  | | --- | --- | | *ANSWER:* | B | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 39. Find the distance between the points (–3, 2) and (5, 9).   |  |  | | --- | --- | | *ANSWER:* |  | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | True | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 40. Refer to the following figure. Which point has an *x*-coordinate that is equal to zero?  ​   |  |  | | --- | --- | | *ANSWER:* | C | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 41. Ivan wishes to determine which antenna he should purchase for his home. The TV store has supplied him with the information:   |  |  |  |  | | --- | --- | --- | --- | | **Range in Miles** |  |  | | | VHF | UHF | Model | Price | | 30 | 20 | A | $40 | | 45 | 35 | B | $50 | | 60 | 40 | C | $60 | | 75 | 55 | D | $70 |   Ivan wishes to receive Channel 17 (VHF) that is located 20 mi east and 45 mi north of his home and Channel 38 (UHF) that is located 23 mi south and 33 mi west of his home. Which model will allow him to receive both channels at the least cost? (Assume that the terrain between Ivan's home and both broadcasting stations is flat.)  Model \_\_\_\_\_\_\_\_\_\_   |  |  | | --- | --- | | *ANSWER:* | D | | *POINTS:* | 1 | | *QUESTION TYPE:* | Subjective Short Answer | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |

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| 42. A furniture store offers free setup and delivery services to all points within a 24-mi radius of its warehouse distribution center. If you live 20 mi east and 14 mi south of the warehouse, will you incur a delivery charge? Justify your answer.   |  |  | | --- | --- | | *ANSWER:* | Yes. The distance mi between house and warehouse is more than 24 mi. | | *POINTS:* | 1 | | *QUESTION TYPE:* | Essay | | *HAS VARIABLES:* | False | | *DATE CREATED:* | 12/25/2015 9:40 AM | | *DATE MODIFIED:* | 12/25/2015 9:40 AM | |