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

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| 1. Given and , calculate the composite functions and and determine their domains.

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

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2. Let and Calculate the composite functions and and determine their domains.

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

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| 3. The domain and range of are:

|  |  |  |
| --- | --- | --- |
|   | a.  | Domain: ; range:  |
|   | b.  | Domain: ; range:  |
|   | c.  | Domain: ; range:  |
|   | d.  | Domain: ; range:  |
|   | e.  | Domain: ; range:  |

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| 4. Complete the statement:If and , then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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

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| 5. Let and. Compute the composite functions and and determine their domains.

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

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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. Complete the statement:If and , then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

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

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| 7. Let and . Calculate the composite functions and and determine their domains.

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

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| 8. The domain and range of are:

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| --- | --- | --- |
|   | a.  | Domain: ; range:  |
|   | b.  | Domain: ; range:  |
|   | c.  | Domain: ; range:  |
|   | d.  | Domain: ; range:  |
|   | e.  | Domain: ; range:  |

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| 9. The domain and range of the function are:

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| --- | --- | --- |
|   | a.  | Domain: ; range:  |
|   | b.  | Domain: ; range:  |
|   | c.  | Domain: ; range:  |
|   | d.  | Domain: ; range:  |
|   | e.  | Domain: ; range:  |

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| 10. The domain and the range of the function are:

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| --- | --- | --- |
|   | a.  | Domain: ; range:  |
|   | b.  | Domain: ; range:  |
|   | c.  | Domain ; range:  |
|   | d.  | Domain: ; range:  |
|   | e.  | Domain: ; range:  |

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| 11. Solve the following equation for if : |

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| 12. Find the point of intersection of the following lines:The line parallel to and passing through the midpoint of the segment connecting the points and .The line perpendicular to and passing through . |

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| --- |
| 13. Find if and  |

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| --- |
| 14. State whether the following functions are even, odd, or neither:A) B) C) D)  |

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| --- |
| 15. What is the maximum possible value of if *x* must satisfy the inequality ? |

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| --- |
| 16. Let and . Find all values of such that the domain of is all of *R.* |

|  |
| --- |
| 17. Compute, , and if and is acute. |

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| --- |
| 18. Solve the following equation for if : |

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| --- |
| 19. Let and . Calculate the composite functions and and determine their domains. |

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| --- |
| 20. Referring to the figure, find the value of . |

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| --- |
| 21. Determine real numbers and so that the line with -intercept at is perpendicular to the line . |

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| --- |
| 22. Find the point on the line closest to the origin. What is the distance between this point and the origin? |

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| --- |
| 23. What is the distance between the maximum point on the parabola and the minimum point on the parabola ? |

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| 24. A line is perpendicular to and passes through . What is the *y*-coordinate of the point on the line whose *x*-coordinate is ? |

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| 25. Compute , , and if and is acute. |

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| 26. Complete the square and find the maximum value of . |

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| 27. Let . Find all values of such that the domain of is . |

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| 28. Find the interval over which the function is increasing. |

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| 29. Let and . Find all values of so that the domain of is . |

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| --- |
| 30. Find the interval over which the function is increasing. |

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| --- |
| 31. Find the point on the line closest to the point . What is the distance between the two points? |

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| --- |
| 32. Find the *x-*coordinates of the points of intersection of the graphs of and for . |

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| 33. For which values of does the parabola *y =* have no real roots? |

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| 34. Find the points of intersection of the two graphs and for . |

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| --- |
| 35. Find the points where the graphs of and intersect for . |

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| --- |
| 36. Determine whether the following functions are even, odd, or neither:A) B) C) D)  |

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| --- |
| 37. Find the set of values of satisfying both and . |

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| --- |
| 38. What is the coefficient of *x* in the expansion of (2 – 3*x*)6? |

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| 39. Find the minimum and maximum values of if . |

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| --- |
| 40. Find the maximum value of if *x* must satisfy the inequality . |

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| --- |
| 41. Compute , , and if and . |

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| --- |
| 42. What is the coefficient of *x*3 in the expansion of (*x* + 2)7? |

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| --- |
| 43. The line in the figure is parallel to the diagonal (dashed segment) of the rectangle.Find the *y*-coordinate of point. |

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| 44. Find the radius of the circle with center that passes through . |

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| 45. The height of water in a certain bay changes over time according to a function of the form , where *A*, *B, C,* and *D* are real numbers. One day, a high tide of 8 ft occurred at 4 AM and low tide of 2 ft occurred at 2 PM. Determine values of *A*, *B, C,* and *D* so that the function *H*(*t*) describes this scenario, where *H*(*t*) is measured in feet and *t* is the number of hours since 12 AM. |

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| 46. Compute and if and . |

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| 47. Find the domain and range of the function . |

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| 48. What is the maximum value of if *x* must satisfy the inequality ? |

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| --- |
| 49. Find the point on the line that is closest to the point . What is the distance between the two points? |

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| --- |
| 50. Find the equation of the line perpendicular to and passing through . What is the -coordinate of the point on this line whose *x*-coordinate is ? |

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| --- |
| 51. Let and . Find all values of such that the domain of is . |

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| --- |
| 52. Find the points of intersection of the graphs of and for . |

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| --- |
| 53. Find the value of such that the point lies on the line of slope through the point  |

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| --- |
| 54. Referring to the figure, compute the value of . |

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| 55. State whether the following functions are even, odd or neither:A) B) C) D)  |

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| 56. Solve the following equation for if : |

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| 57. Find the equation of the circle passing through the point and whose center is located at the midpoint of the line segment joining and . |

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| 58. Find the point of intersection of the following lines:The line with slope 2 passing through the midpoint of the segment joining the points and .The line perpendicular to and passing through . |

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| 59. Solve the following equation for if : |

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| 60. Use the addition formula to compute exactly. |

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| 61. Find the minimum value of the angle between the segment joining a point on the graph of with the origin, and the -axis for . |

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| 62. Solve the following equation for if : |

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| 63. You are buying a video game system on layaway. You deposit $100 and make weekly payments. The amount you owe after *w* weeks is given by the function *A*(*w*) = 400 – 40*w*.A) What is the slope and what does it mean in this context?B) What is the *y*-intercept and what does it mean in this context?C) What was the original cost of the gaming console?D) How many weeks does it take to pay off the gaming console? |

|  |
| --- |
| 64. Find the solution sets of the following inequalities:A) B)  |

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| --- |
| 65. What is the maximum possible value of if *x* must satisfy the inequality ? |

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| --- |
| 66. Find the set of values of satisfying both and . |

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| --- |
| 67. Find the point on the line closest to the point . |

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| --- |
| 68. Find the greatest and smallest values of such that satisfies the inequalities and . |

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| --- |
| 69. What is the coefficient of *x*2 in the expansion of (3 – *x*)5? |

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| --- |
| 70. Find the maximum value of if *x* must satisfy the inequality . |

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| --- |
| 71. Suppose that . What are the minimum and maximum possible values of ? |

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| 72. Let , . Find the value of in the interval (–2, 3), such that the points and are farthest. |

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| 73. Compute , , and if and is acute. |

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| 74. A research study suggests the relationship between the total goals made, *x*, by the highest-paid National Hockey League (NHL) centers and their annual salaries that season, *y*, is described by the linear equation *y* = 7,500,000 + 300,000*x*.A) What is the slope and what does it mean in this context?B) What is the *y*-intercept and what does it mean in this context? |

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| 75. Suppose that is even and is odd. Determine whether the following functions are even, odd, or neither, in general:A) B) C) D)  |

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| 76. Find the minimum and maximum values of for satisfying and . |

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| --- |
| 77. Find the greatest and the smallest values of such that satisfies the inequalities and . |

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| --- |
| 78. Let and . Calculate the composite function and determine its domain and range. |

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| --- |
| 79. Referring to the figure, find the equation of the line containing the altitude from point to side of the triangle. What is the -coordinate of the point on this line whose *x*-coordinate is ? |

**Answer Key**

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| 1. d |

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| --- |
| 2. c |

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| --- |
| 3. b |

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| --- |
| 4. a |

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| --- |
| 5. a |

|  |
| --- |
| 6. b |

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| --- |
| 7. b |

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| --- |
| 8. a |

|  |
| --- |
| 9. a |

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| --- |
| 10. d |

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| 11.  |

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| 12.  |

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| 13.  |

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| 14. A) EvenB) OddC) NeitherD) Even |

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| 15. 9 |

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| 16.  |

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| 17.  |

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| 18. , |

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| 19. Domain: Domain:  |

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| 20.  |

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| 21.  |

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| 22.  |

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| 23.  |

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| 24. 0 |

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| 25.  |

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| 26. 1 |

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| 27.  |

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| 28.  |

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| 29.  |

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| 30.  |

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| 31.  |

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| 32.  |

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| 33.  |

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| 34.  |

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| 35.  |

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| 36. A) EvenB) OddC) EvenD) Neither |

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| 37. (–1, 6) |

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| --- |
| 38. -576 |

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| --- |
| 39. Minimum: 0; maximum: 7 |

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| 40. 9 |

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| 41.  |

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| 42. 560 |

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| 43. 3 |

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| 44.  |

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| 45.  |

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| 46. ,  |

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| 47. Domain: Range:  |

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| 48.  |

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| 49.  |

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| 50. *y =* 2*x* + 5; *y* = –7 when *x* = –6 |

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| 51.  |

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| 52. , , |

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| 53.  |

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| 54.  |

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| 55. A) EvenB) OddC) NeitherD) Neither |

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| 56.  |

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| 57.  |

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| 58.  |

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| 59.  |

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| 60.  |

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| 61.  |

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| 62.  |

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| 63. A) –40; the amount that the total still owed decreases per weekB) 400; the amount owed after making the initial deposit of $100C) $500D) 10 weeks |

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| 64. A) (–1/3, 5)B) (–4, 9) |

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| 65.  |

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| --- |
| 66. (1, 9) |

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| --- |
| 67. (2, 4) |

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| --- |
| 68. Minimum: 1; maximum: 5 |

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| --- |
| 69. 270 |

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| --- |
| 70. 16 |

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| --- |
| 71. Minimum: 0; maximum: 10 |

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| --- |
| 72.  |

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| 73.  |

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| --- |
| 74. A) 300,000; the amount the annual salary increases for every goal madeB) 7,500,000; the salary if the center made zero goals that season |

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| --- |
| 75. A) EvenB) NeitherC) EvenD) Odd |

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| --- |
| 76. Minimum: 0; maximum: 11 |

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| --- |
| 77. 6, 1 |

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| --- |
| 78. Domain: ; range:  |

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| --- |
| 79. *y* = –4*x* +13; *y =* –3 when *x* = 4 |