Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Simplify:

2. Simplify:

3. Simplify:

4. Simplify: -6

5. Simplify:

6. Rewrite using radical notation.

7. Rewrite in exponential form: 

8. Solve:

9. Solve: 

10. Solve:

11. Identify the x-intercepts.

12. Graph:

13. Write the quadratic equation that has x-intercepts of and .

14. Write the cubic equation that has x-intercepts of , and .

15. Solve: -2

16. Solve:

17. Solve:

18. Solve:

19. Determine the value of *c* that makes a perfect square?

20. Determine the value of *c* that makes a perfect square?

21. Simplify:

22. Simplify:

23. Simplify:

24. Simplify:

25. Solve:

26. Find the sum of the series. 

27. Find the sum of the first 13 terms of the series

28. Solve for *x*.

7

45°

45°

*x*

θ

7

24

29. Find the sin(θ).

30. Solve for *x,* round to the nearest hundredth.

21°

*x*

120

31. How does the equation y = compare to its parent graph, y = ?

32. How does the equation y = compare to its parent graph, y =?

33. What is/are the equation(s) of the vertical asymptotes of ?

34. Write a rational function that has vertical asymptotes at and and a horizontal asymptote at .

35. Write a rational function that has vertical asymptotes at and and a horizontal asymptote at .

36. Write the equations of the vertical and horizontal asymptotes of the following graph.



37. Write the equations of the vertical and horizontal asymptotes of the following graph.



38. Given the graph, state the domain.



39. Find the inverse of the given function, .

40. Find the inverse of the given function,

41. Given the graph, write the equation.



42. Given the graph, write the equation.



43. Sketch a graph of a polynomial of:

 A. degree 2 B. degree 3 C. degree 4

44. Sketch a graph of a quadratic function that is reflected over the x-axis, shifted left 2, up 4 and is wider (vertically shrunk) by a factor of ½ in comparison to the parent graph,.

45. Using the parent graph , write the equation if it were reflected over the *x*-axis and shifted

down 4 units.

46. Using the parent graph , write the equation if it were reflected over the x-axis and shifted left 4 units and shifted up 5 units.

47. Find all of the roots of .

48. Find all the roots of

49. Given is a root of , determine all of the other roots.

50. Given is a root of , determine all of the other roots .

51. Determine all of the roots of the function,

52. Determine the roots of .

53. Determine the roots of, .

54. In the right triangle below, solve for θ.

 

55. Mike Schmidt hit the following number of homeruns in a five year span (48, 31, 35, 40). How many

 homeruns did he hit in the fifth year to give him an average of 38 homeruns per year?

56. Graph:

57. Graph



58. Solve for *x*:

59. Solve for *x*:

60. Use the properties of logarithms to completely expand:

61. Use the properties of logarithms to condense:

62. Use the properties of logarithms to condense:

**For Question #63-66, please refer to the formula sheet.**

63. If $8,210 is invested at 7.2% interest compounded daily, find the value of the account after 12 years.

64. A particular substance weighing 427 micrograms grows at a rate of 14% per day compounded

 continuously. Find the approximate weight to the nearest hundredth micrograms of the substance after 7 days.

65. The initial population of bacteria is 300 microorganisms has been growing at a of 7.3% per day compounded continuously. Determine how long it will take for the population to grow by 100 microorganisms.

66. The box and whisker plot below shows the free throw shooting percentage for every NBA player. About 25% of the players scored above what value?

50

60

70

80

90

100

55

65

75

85

95

NBA free throw percentages

67. The following table shows students’ favorite ice cream flavors.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Chocolate | Vanilla  | Strawberry | Total |
| 10th  | 45 | 32 | 15 | 92 |
| 11th | 52 | 64 | 17 | 133 |
| 12th  | 80 | 22 | 13 | 115 |
| Total | 177 | 118 | 45 | 340 |

 a.) What percent of 12th graders preferred chocolate?

 b.) What percent of the total population is in 10th grade?

 c.) What percent of people who preferred strawberry are in 10th grade?

68. The daily high temperature in Doylestown for the month of July is depicted in the following stem and leaf plot. What is the mean, median, mode and range temperatures for the month?

|  |  |
| --- | --- |
| 6 | 5 6 7 7 |
| 7 | 1 1 2 3 5 6 6 9 |
| 8 | 0 1 3 5 7 8 9 9 9 |
| 9 | 2 5 6 6 7 8 9 |
| 10 | 1 2 2 |

69. A bag of M&M’s contains 15 brown, 10 yellow, 10 red, 5 green, 5 orange, and 5 blue. Three M&M’s are picked from the bag without replacement. Write the expression that gives the probability of selecting a red M&M each time?

70. The graph of the given coordinates is shown below, determine the linear equation that best fits the data.



|  |  |
| --- | --- |
| x | y |
| 1114 | 3 |
| 14 | 4 |
| 15 | 4 |
| 21 | 6 |
| 24 | 8 |
| 24 | 10 |
| 25 | 11 |
| 29 | 15 |