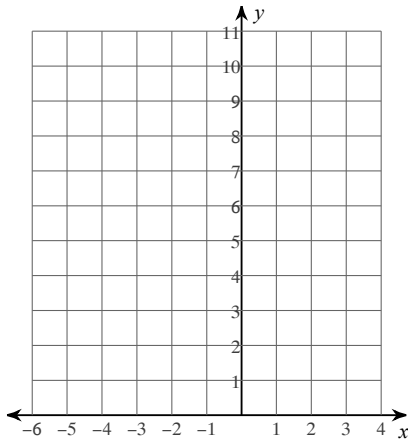


Summer Math Packet

Date _____

Sketch a graph of function below. First, make a table of values with the x values -3, -2, -1, 0, and 1. Then, plot the points and draw the appropriate curve.

1) $y = 2x^2 + 4x + 4$



Identify the vertex point and indicate whether it is the minimum or maximum value for the function. Show work.

2) $y = -2x^2 - 4x - 4$

Factor each completely.

3) $n^2 + 13n + 30$

4) $5x^2 + 38x + 21$

Solve each equation by factoring. Show work.

5) $x^2 - 2x - 48 = 0$

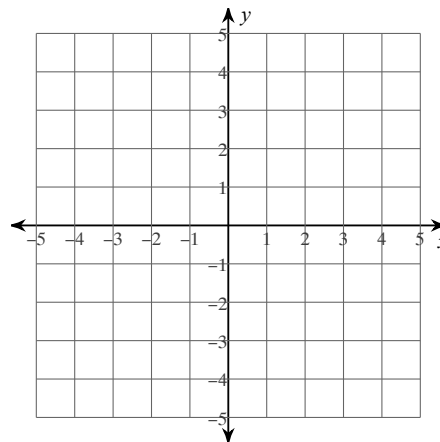
6) $2a^2 + 7a - 15 = 0$

Solve the equation with the quadratic formula. Show work.

7) $4x^2 - 8x - 117 = 0$

Solve the system by graphing. You must give your answer as an ordered pair.

8) $y = -x - 3$
 $y = -6x + 2$



Solve each system by elimination. You must show work.

9) $12x + 3y = -15$
 $-3x - y = 1$

Solve each system by substitution. You must show work.

10) $y = -12x - 12$
 $8x + 2y = 8$

Clearly indicate the units and values in your solution.

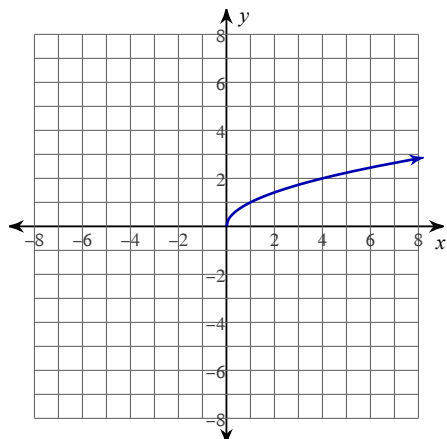
11) Stephanie and Micaela each improved their yards by planting hostas and ivy. They bought their supplies from the same store. Stephanie spent \$528 on 11 hostas and 38 pots of ivy. Micaela spent \$407 on 33 hostas and 7 pots of ivy. Find the cost of one hosta and the cost of one pot of ivy.

12) Write the inequality $-3 \leq x < 8$ using interval notation.

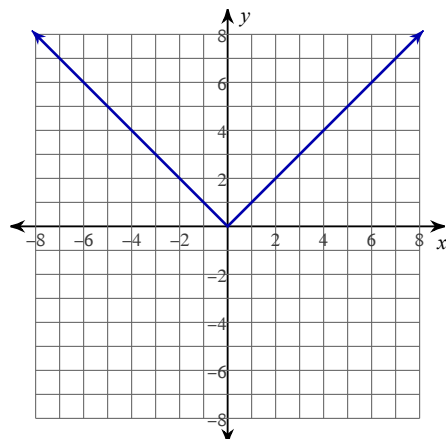
13) Write the interval $(9, 21]$ using inequality notation.

For each of the following write down the name of the parent function, then indicate both the domain and the range. (Hint: The function names may be any of the following: identity, square, square root, cube, cube root, absolute value, constant, floor.)

14)



15)



Perform the indicated operation.

16) $h(x) = x^2 - 4$
 $g(x) = 3x - 4$
Find $h(g(x))$

Find the inverse of each function.

17) $f(x) = 2x - 5$

18) $g(n) = (n + 2)^5 - 3$

Simplify. Your answer should contain only positive exponents.

19) $\frac{3v^{-2}}{4u^{-1}v^3}$

20) $y^{-2} \cdot (2x^4y^4)^2$

Simplify. Do not give a decimal approximation.

21) $\sqrt{448}$

Write the expression in radical form.

22) $2^{\frac{3}{4}}$

Write the expression in exponential form.

23) $\sqrt{7}$

Evaluate.

24) $\log_7 49$

Use a calculator to approximate each to the nearest thousandth.

25) $\log_3 35$

Expand the logarithm.

26) $\log_7 \frac{a^4}{b}$

Condense the logarithm.

27) $\log_3 2 + 6\log_3 5$

Solve each equation.

28) $7^{3v} = 49$

29) $\log_{12} (5b + 8) = \log_{12} 18$

Convert each degree measure into radians.

30) 580°

Convert each radian measure into degrees.

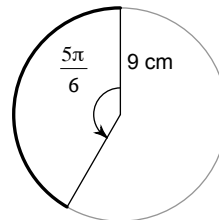
31) $\frac{3\pi}{4}$

State the quadrant in which the terminal side of each angle lies.

32) $\frac{8\pi}{3}$

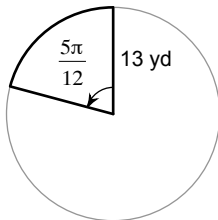
Find the length of each arc. Round your answers to the nearest tenth. Show work.

33)



Find the area of each sector. Round your answers to the nearest tenth. Show work.

34)



Find the exact value of each trigonometric function.

35) $\sin \frac{\pi}{4}$

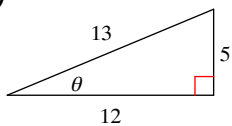
36) $\tan \frac{\pi}{6}$

37) $\tan \frac{\pi}{3}$

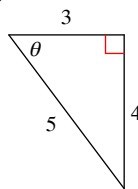
38) $\cos \frac{\pi}{2}$

Find the value of the trig function indicated. Give your answer as a fraction.

39) $\cos \theta$

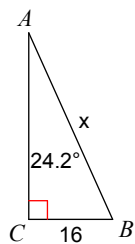


40) $\tan \theta$

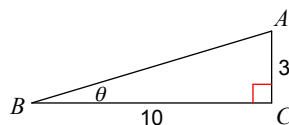


Find the measure of the indicated side. Round to the nearest tenth. Show work.

41)

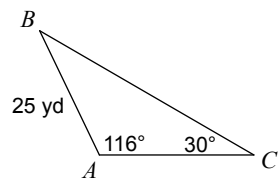


42)



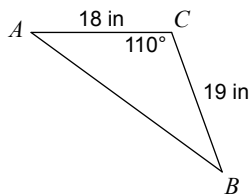
Use the Law of Sines to find the indicated measurement. Round your answers to the nearest tenth. Show work.

43) Find BC



Use the Law of Cosines to find the indicated measurement. Round your answers to the nearest tenth.

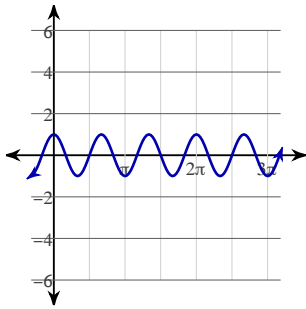
44) Find AB



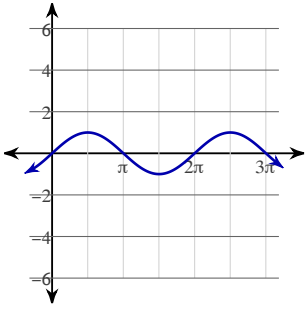
45) $y = 3\cos \theta$

Multiple Choice: Select the correct graph for the given function.

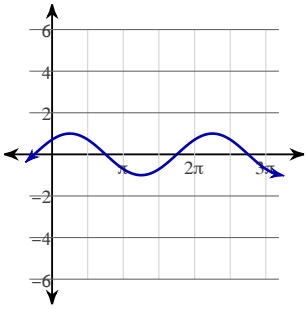
A)



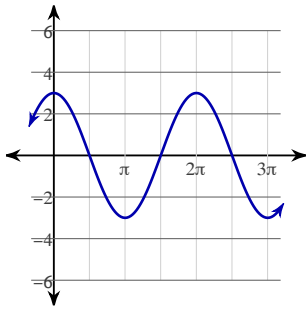
B)



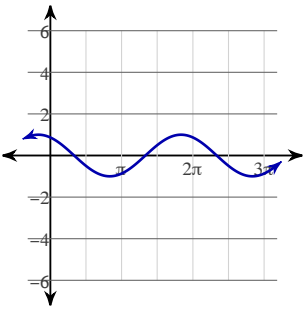
C)



D)



E)



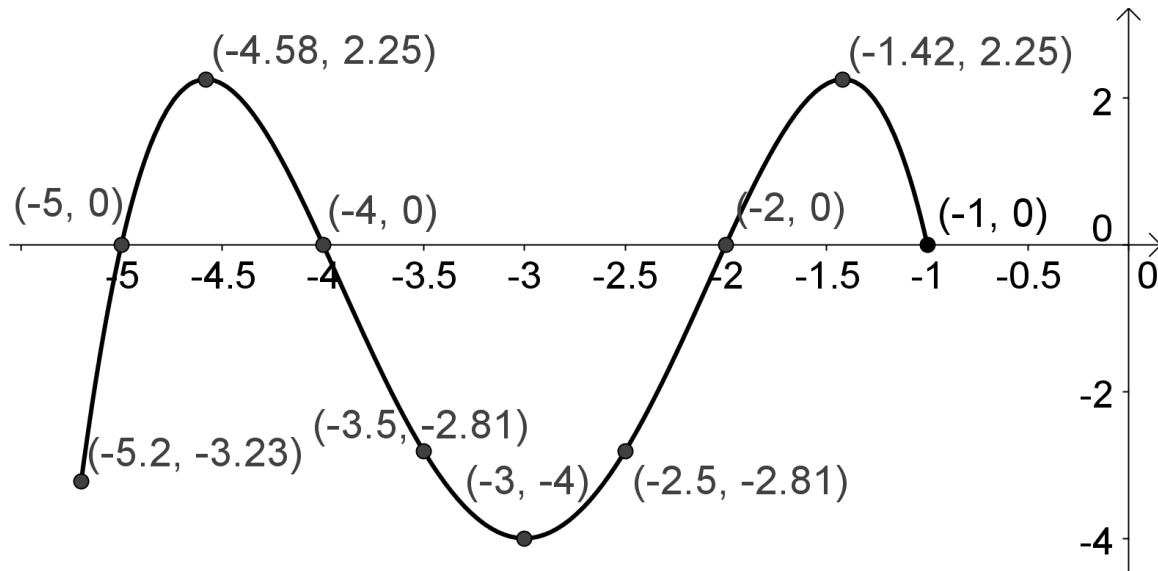
46) Write down the definition for the mathematical term *function*.

47) Write down the definition for the mathematical term *domain*.

48) Write down the definition for the mathematical term *range*.

49) Solve the following word problem. You must include a diagram along with your work and an answer with the appropriate units.

A ship, offshore from a vertical cliff known to be 100 feet in height, takes a sighting of the top of the cliff. If the angle of elevation is found to be 25° , how far offshore is the ship? Round your answer to the nearest tenth.



Use the graph of $f(x)$ above to answer questions 50 through 56.

50) What is $f(-4.58)$?

51) For what numbers x is $f(x) < 0$. Use interval notation.

52) What is the domain of f ? Use interval notation.

53) What is the range of f ? Use interval notation.

54) What are the x -intercepts?

55) For what values of x does $f(x) = 2.25$?

56) How often does the line $x = -1$ intersect the graph?