Coordinate Algebra 1st Semester Review
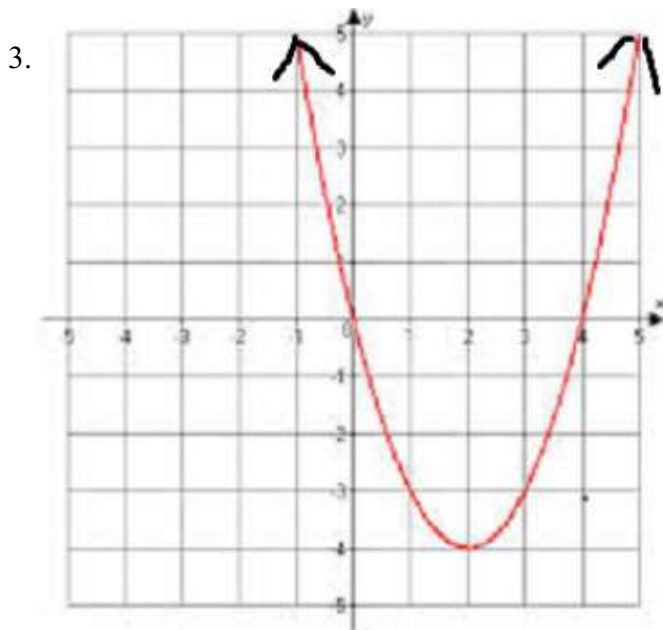
Name: _____

Date: _____

1. Use the following equations to solve for x & y.

$$y = -3x + 5$$
$$5x - 4y = -3$$

2. $3^{x-5} = \dfrac{1}{9}$

3.

Identify the following:

Domain:

Range:

Interval of Increase:

Interval of Decrease:

y-intercept:

4. If f(x) = 9 and g(x) = 2, what is equivalent to f(x) · g(x)?

5. The human populating is being consumed by alien zombie at a rate of 25% every day. If the human population started at 6000000. How many human remain after 3 weeks?

6. The equation n=500(1.035)^4 represents how much money John will have in has savings account after 4 years. What percent interest is he earning yearly?

7. Kevin can make an ice-cream sundae in 6 minutes. Renee can make the same sundae in 2 minutes. How long, in minutes, will it take Kevin and Renee to make the ice-cream sundae if they work together?

8. How is the graph of $g(x) = -x^2 - 2$ related to the graph of $f(x) = x^2$?

   A The graph of $g(x) = -x^2 - 2$ is reflected across the y-axis and translated up 2 units.

   B. The graph of $g(x) = -x^2 - 2$ is reflected across the x-axis and translated up 2 units.

   C. The graph of $g(x) = -x^2 - 2$ is reflected across the y-axis and translated down 2 units.

   D. The graph of $g(x) = -x^2 - 2$ is reflected across the x-axis and translated down 2 units.

9. If the function $g(x) = f(x + 2)$, how can the graph of the function $g(x)$ be obtained from the graph of $f(x)$?

10. Given the function $f(x) = x^2 - 6x + 10$, what is the average rate of change of the function over the interval $[4, 8]$?

11. A bicycle company makes two kinds of bicycles: mountain bicycles and street bicycles. It takes an employee 1.25 hours to make a mountain bicycle and 3 hours to make a street bicycle. The employee makes at most 30 bicycles total per week. At least 12 mountain bicycles are made each week. Assume the employee works no more than 40 hours per week. Which set of constraints will find how many of each type of bicycle should be made to maximize profit? Use m for mountain bicycle and s for street bicycle.

A
$$\begin{cases} 3m + 1.25s \le 40 \\ m + s \le 30 \\ m \ge 12 \end{cases}$$

C.
$$\begin{cases} 3m + 1.25s \le 40 \\ m + s \ge 30 \\ m \le 12 \end{cases}$$

B.
$$\begin{cases} 1.25m + 3s \le 40 \\ m + s \le 30 \\ m \ge 12 \end{cases}$$

D.
$$\begin{cases} 1.25m + 3s \le 40 \\ m + s \ge 30 \\ m \le 12 \end{cases}$$

12. Which equation shows the formula $A = P(1 + r)$ solved for r, in terms of A and P?

13. Ms. Glick drew two line segments on the chalkboard. The first line segment was 168 cm long and the other was 5 feet 2 inches long. If 1 inch = 2.54 cm, approximately how many inches longer was the first line segment than the second?

14. The sum of two real numbers is zero. Which statement about these two numbers is always true?

    A   They are identities.

    B.   They are reciprocals.

    C.   They are additive inverses.

    D.   They are negative reciprocals.

15. Which statement is justified by the transitive property of equality?

    A $x + 3 = x + 3$

    B.   If $y = 7 - x$, then $y + x = 7 - x + x$

    C.   If $y + 7 - x$, then $7 - x = y$

    D.   If $x + 3 = y$ and $y = 7 - x$, then $x + 3 = 7 - x$

16. Which statement illustrates the commutative property of addition?

    A $3z + (3x + 3y) = 3(z + x + y)$

    B. $3z + (3x + 3y) = 3(z + x) + 3y$

    C. $3z + (3x + 3y) = 3z + 3(x + y)$

    D. $3z + (3x + 3y) = (3x + 3y) + 3z$

17. Which statement illustrates the associative property of addition?

    A $a + (2a + 4) = (a + 2a) + 4$

    B. $a + (2a + 4) = a(1 + 2) + 4$

    C. $a + (2a + 4) = a + (4 + 2a)$

    D. $a + (2a + 4) = a + 2(a + 2)$

18. What is the solution to the following inequality?

    $4x - 6 \geq -6x + 4$

19. Solve $10 - 4x \leq 50$

20. The perimeter of a square is 20 cm. What is the length of 1 side? (Hint: all 4 sides are the same)

21. A walker starts walking 2 miles daily. She increases her daily walking distance by 0.5 mile each week. Which equation represents her daily walking distance the nth week?

22. -125, -12.4, -119.8, -117.2, … What is the 31st term of the above arithmetic sequence?

23. Jason studied how quickly ants consume things. He counted the number of ants on a banana peel at the end of each minute for five minutes. His results formed the pattern below.

12, 19, 26, 33, 40

Let n represent the number of minutes since Jason began his study. Which expression could be used to predict the number of ants on the banana peel after n minutes?

A $7n$

B. $7 + 5n$

C. $5 + 7n$

D. $12n$