Compare types of Equations WS                    Semester Reviewer: _____

**1. We have looked at (3) types of equations in detail this year. Can you list the (3) types?**

a.

b.

c.

**#2-4, Use equations A-C listed below to answer**

   **A.** $y = 3x^2 + 6x$    .      **B.** $y = 4(1.5)^x$        **C.** $y = -3x + 10$

2.  Use equation A to do these things:

    a.  Identify the shape of the graph        b. Identify the values for a, b and c.

    c.  Find the vertex of graph            d. Does the graph have a maximum or minimum value?

3. Use equation B to do these things:

    a. What shape is graph?            b. Determine whether growth or decay.

    c. What is the starting value?        d. What is the percent of increase?

4. Use equation C to do these things:

    a. Identify the shape of graph    b.  Make a quick sketch of the graph.

**#5-8, Given data, determine the *type* of equation that would fit it best.**
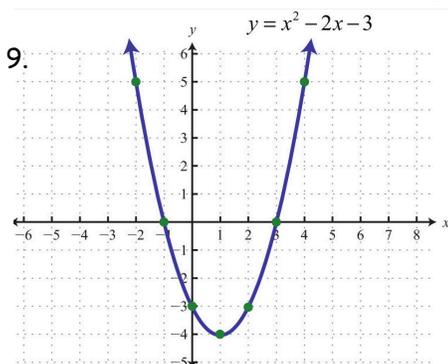
5.

| x | y |
|---|---|
| 9 | 2 |
| 3 | -2 |
| -3 | -6 |
| -9 | -10 |

6.

| x | y |
|---|---|
| -3 | 9 |
| -2 | 4 |
| -1 | 1 |
| 0 | 0 |
| 1 | 1 |
| 2 | 4 |
| 3 | 9 |

7.

| 0 | 0 |
|---|---|
| 1 | 1 |
| 2 | 4 |
| 3 | 9 |
| 4 | 16 |
| 5 | 25 |

8.

**#9-10, Find the domain and range.**

9.



$y = x^2 - 2x - 3$

Domain:

Range:

10.



$4x^2 + y^2 - 16x + 8y = -16$

(2, -4)  rx = 2  ry = 4
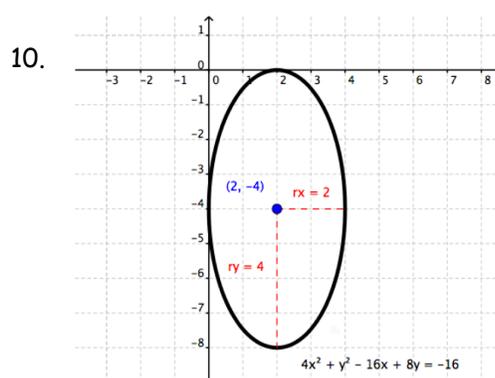
Domain:

Range

#11-12, Make a scatter plot of data on calculator, then answer the questions.

| Bounce | Rebound Height (m) |
|--------|--------------------|
| 0 | 0.912 |
| 1 | 0.759 |
| 2 | 0.603 |
| 3 | 0.496 |
| 4 | 0.411 |
| 5 | 0.328 |
| 6 | 0.271 |

11.    a. What type of equation did you 1st believe this to be and why?

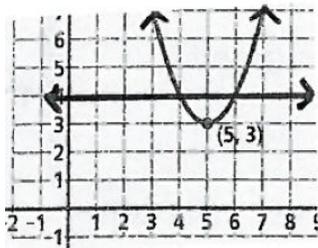b. Find the best-fit equation for the data.

c. What is the correlation value?

12.

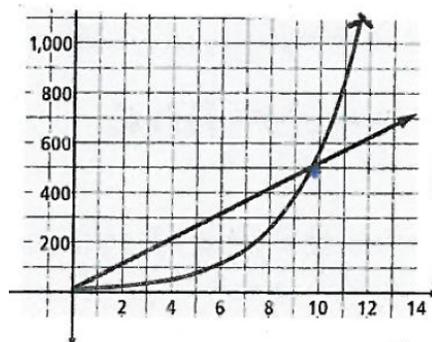| Oil Changes Per Year | 3 | 5 | 2 | 3 | 1 | 4 | 6 | 4 | 3 | 2 | 0 | 10 | 7 |
|----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Cost of Repairs ($) | 300 | 300 | 500 | 400 | 700 | 400 | 100 | 250 | 450 | 650 | 600 | 0 | 150 |

a. What type of equation did you 1st believe this to be and why?

b. Find the best-fit equation for the data.

c. What is the correlation value?

**#13-14, Find the solution(s) for each system.**

13.



14.



**#15-17, Determine whether the sequence is arithmetic or geometric**

15.  40, 43, 46, 49, 52, …        16.  25, 12.5, 6.25, 3.125, …        17.  6.8, 7.1, 7.4, 7.7, …

**#18-19, Find the next two terms in the sequence.**

18.
$$a_n = -3(a_{(n-1)})$$
$$a_1 = 2$$

19.
$$a_n = a_{(n-1)} - 5$$
$$a_1 = 73$$

**#20-23, Decide which of the situations the function with the given equation describes.**

a.  $f(x) = -4x + 18$        b.  $g(x) = 0.4 \, (5)^x$        c.  $h(x) = 5(0.4)^x$        d.  $j(x) = \frac{2}{3}x - 7$

20. constant increase            22. exponential decay

21. exponential growth           23. constant decrease