**9.2 Corrective Assignment – Exponential Decay**

Algebra 2

Name: _____ ID: 1

Date:_____ Period:_____

Tell whether the equation or graph represents an exponential growth or exponential decay function.

1) $y = 5(0.4)^x$

2) $y = -3\left(\frac{7}{2}\right)^x$

3) $y = 2\left(\frac{6}{5}\right)^{-x}$
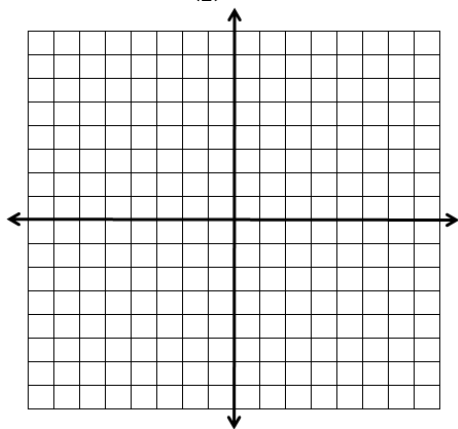
4) $y = 9(1.5)^x$

5) $y = 2.3(0.5)^x$

6) $y = 0.2(0.3)^{-x}$

7) $y = -3(6)^x$

8) $y = -\frac{7}{5}\left(\frac{1}{5}\right)^x$

Sketch the graph of each exponential function by doing the following: Sketch the asymptote, label at least **three distinct coordinate points** on each graph, and write the domain and range of each function.
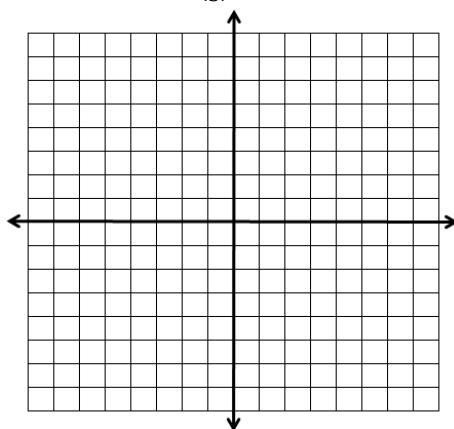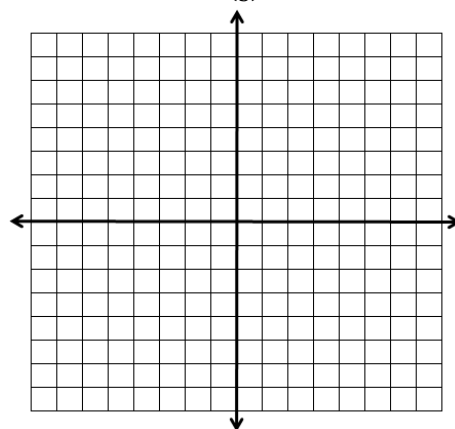
9. $y = 4\left(\frac{1}{2}\right)^x$

10. $y = -3\left(\frac{1}{3}\right)^x$

11. $y = -2\left(\frac{1}{5}\right)^{x+2} + 3$

Domain:        Range:

Domain:        Range:

Domain:        Range:

Give the **percent** *increase* or **percent** *decrease* for each equation.

12) $y = 5(3.1)^x$

13) $y = 0.25(1.029)^x$

14) $y = 1.9(0.893)^x$

15) $y = 36(6.2)^x$

16) $y = 45(15.8)^x$

17) $y = 3(0.7)^x$

18) $y = 0.2(3.565)^x$

19) $y = 2(2.3)^x$

For each scenario, write an exponential model. To keep things simple, use $x$ as the input variable and $y$ as the output variable.

20) A baseball card is worth $50 and its value increases at a rate of 23.5% per year.

21) 300 grams of radioactive material decays at a rate of 3.7% per year.

# Answer Key to 9.2 CA – Exponential Decay

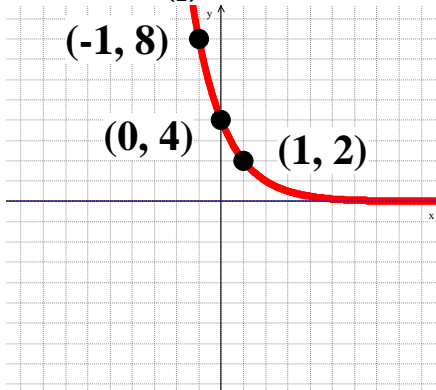1) Decay      2) Growth      3) Decay      4) Growth
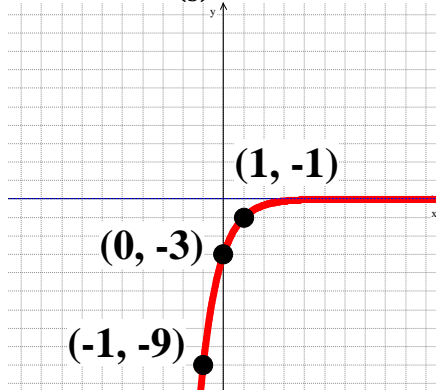
5) Decay      6) Growth      7) Growth      8) Decay
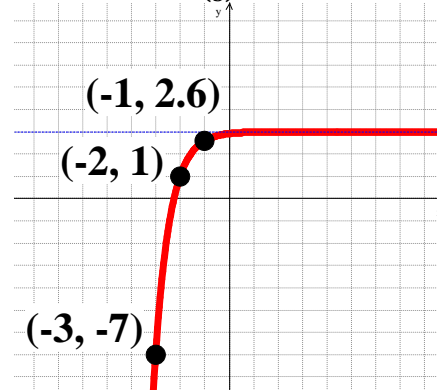
9. $y = 4\left(\frac{1}{2}\right)^x$

(-1, 8)
(0, 4)
(1, 2)

Domain:      Range:
All real numbers      $y > 0$

10. $y = -3\left(\frac{1}{3}\right)^x$

(1, -1)
(0, -3)
(-1, -9)

Domain:      Range:
All real numbers.      $y < 0$

11. $y = -2\left(\frac{1}{5}\right)^{x+2} + 3$

(-1, 2.6)
(-2, 1)
(-3, -7)

Domain:      Range:
All real numbers.      $y < 3$

12) 210% increase      13) 2.9% increase      14) 10.7% decrease      15) 520% increase

16) 1480% increase      17) 30% decrease      18) 256.5% increase      19) 130% increase

20) $y = 50(1.235)^x$

21) $y = 300(0.963)^x$