

Name Key Date _____ Hour _____

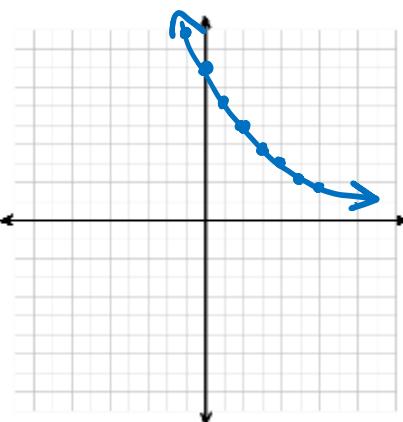
REVIEW 9.1 – 9.3

Algebra 2 Trig G

1. Sketch the graph. State the function's domain and range, and circle whether it is decay or growth.

$$y = 8(0.8)^x$$

X	Y
-1	10
0	8
1	6.4
2	5.12
3	4.096



Domain: all real #s

Range: all positive real #s

Decay / Growth ?

- 2 – 3. Determine whether each function represents exponential GROWTH or DECAY.

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

decay

3. $y = \frac{4}{9}(5)^x$

growth

4. Using a calculator, write the equation of an *exponential function* that passes through the given points.
 (-1, 0.075), (1, 1.2), (3, 19.2), (5, 307.2)

$y = .3 \cdot 4^x$

- 5 – 6. Solve each equation.

5. $4^{5x} = 64^{x-2}$
 $4^{5x} = 4^{3(x-2)}$

$5x = 3x - 6$

$2x = -6$

$x = -3$

6. $25^{3x-1} = 5^{x+3}$
 $5^{2(3x-1)} = 5^{x+3}$

$6x - 2 = x + 3$

$5x = 5$

$x = 1$

7. Write the equation in exponential form.

$\log_{\frac{3}{4}} \frac{9}{16} = 2$
 $\left(\frac{3}{4}\right)^2 = \frac{9}{16}$

8. Write the equation in logarithmic form.

$(3)^{-3} = \frac{1}{27}$

$\log_3 \frac{1}{27} = -3$

- 9 – 10. Rewrite each statement using only $\log 15$ and $\log 3$

9. $\log 5 = \log\left(\frac{15}{3}\right)$

$= \log 15 - \log 3$

10. $\log 45 = \log(15 \cdot 3)$

$= \log 15 + \log 3$

11 – 12. Use $\log_5 6 = A$, $\log_5 11 = B$, and $\log_5 5 = 1$ to approximate the value of:

$$11. \log_5 \frac{11}{6} = \log_5 11 - \log_5 6 \\ = \boxed{B - A}$$

$$12. \log_5 55 = \log_5 (11 \cdot 5) \\ = \log_5 11 + \log_5 5 \\ = \boxed{B + 1}$$

13 – 16. Switch to exponential form and solve for x.

13. $\log_6 216 = x$

$$6^x = 216 \\ \boxed{x=3}$$

14. $\log_3 x = 5$

$$3^5 = x \\ \boxed{243 = x}$$

15. $\log_x 100 = 2$

$$x^2 = 100 \\ \boxed{x=10}$$

16. $\log_5 (3x+26) = 3$

$$5^3 = 3x + 26 \\ 125 = 3x + 26 \\ 99 = 3x \\ \boxed{33 = x}$$

17 – 22. Combine to get a single log on each side and solve for x.

17. $\log_4 (152) = \log_4 (19x)$

$$152 = 19x \\ \boxed{8 = x}$$

18. $\log_7 (8x+10) = \log_7 (5x+73)$

$$8x+10 = 5x+73 \\ 3x = 63 \\ \boxed{x=21}$$

19. $3 \cdot \log_3 (x) = \log_3 (729)$

$$x^3 = 729 \\ \boxed{x=9}$$

20. $\log (7) + 2 \cdot \log (x) = \log (252)$

$$\log 7x^2 = \log 252 \\ 7x^2 = 252 \\ x^2 = 36 \\ \boxed{x=6}$$

21. $\log_2 (10) + \log_2 (3x-3) = \log_2 (120)$

$$\log_2 10(3x-3) = \log_2 120 \\ 30x - 30 = 120 \\ 30x = 150 \\ \boxed{x=5}$$

22. $\log (x) - \log (11) = \log (4)$

$$\log \frac{x}{11} = \log 4 \\ \frac{x}{11} = 4 \\ \boxed{x=44}$$