

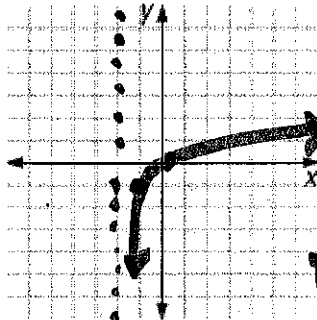
Name _____

Hour _____

Exponentials/Logs Review

Graph each equation. Make sure you label your asymptote and critical point.

1. $y = \log_2(x+2) - 1$



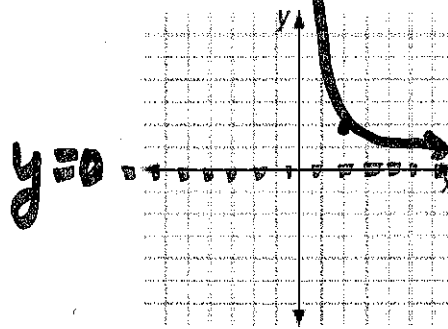
$$\begin{array}{r|l} x & y \\ \hline -1 & -1 \\ 0 & 0 \end{array}$$

D: $(-2, +\infty)$

$x = -2$

R: $(-\infty, +\infty)$

2. $y = 2 \cdot \frac{1}{4}^{x-1}$



$$\begin{array}{r|l} x & y \\ \hline 1 & 2 \\ 2 & 1 \\ 3 & 1/2 \\ 4 & 1/4 \end{array}$$

In 3 – 8, solve for x . Round to 4 places, if necessary.

3. $5^x = \frac{1}{25}$

3. -2

4. $2 \cdot 3^x = 18$

4. 2

5. $3^x + 5 = 16$

5. 2.1827

6. $4^x = 25$

6. 2.3219

7. $3^x - 8 = 1$

7. 2

8. $4^x = \frac{1}{8}$

8. $-\frac{3}{2} = -1.5$

9. Carbon-14 has a half-life of 5730 years. If a ground sloth has 10 million atoms of Carbon-14 in it when it died many centuries ago, how many atoms will it have 16,000 years after it died?

1.44 million atoms

10. Suppose you invest \$1600 at an annual interest rate of 4.6% compounded continuously. How much will you have in the account after 4 years?

\$1923.22

In 11-16, solve for x . Round to 4 places, if necessary.

11. $\log_3(x+1) = 2$

11. 8

12. $\log x = 5$

12. 100,000

13. $7\log_3 3 - 8\log_3 3 = x$

13. -1

14. $\log_4 x + \log_4 2 = 8$

14. 32,768

15. $\log_2 x^3 - 1 = -3$

15. .6300

16. $\log_5 722 = x$

16. 4.0896

17. An initial population of 400 ducks increases at an annual rate of 18%. How many ducks will there be in 5 years?

915 ducks

18. In the year 2000, the median price of a single-family home in the United States was \$227,200. The median price has grown by 8.7% annually. What would the price be in 2015, assuming the growth remains constant?

\$794056.65

19. Write an exponential function to model a \$20,500 car that depreciates 10% each year. Find the value of the car in 5 years

$$y = 20500(.9)^x$$

\$12105.04

20. Jack invested \$2000 into an account that pays an annual interest rate of 3.5% compounded continuously. How long will it take for the original amount invested in the account to double?

$$A = Pe^{rt}$$
$$4000 = 2000e^{.035t}$$
$$2 = e^{.035t}$$

$$t = 19.8 \text{ yrs}$$

= 19 yrs, 9 months, 20 days