Algebra 2 Name KEY

5.1-5.3 Quiz Review

Date_____ Period____

State whether the function is a growth or decay.

1) $y = -4 \cdot \left(\frac{1}{2}\right)^x$ Since $b < 1$ we have a decay function.

2) $y = \frac{1}{3} \cdot 4^x$ Since $b > 1$ we have a growth function.

3) $y = \frac{1}{2} \cdot \left(\frac{1}{4}\right)^x$ $b < 1$, decay function

4) $y = -3 \cdot \left(\frac{1}{2}\right)^x$ $b < 1$, decay function

Evaluate each expression.

5) $\log_2 64$ 6

6) $\log_7 343$ 3

7) $\log_6 216$ 3

8) $\log_4 \frac{1}{64}$ -3.0011

9) $\log_3 243$ 5

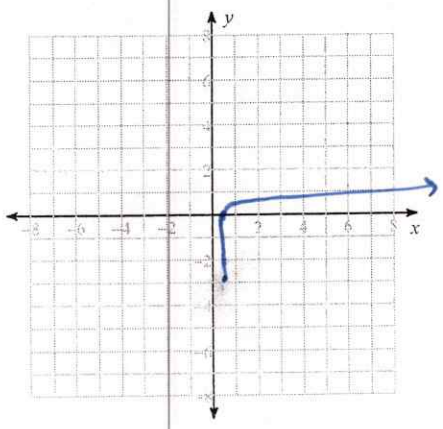
10) $\log_4 64$ 3

11) $\log_2 \frac{1}{64}$ -6.0023

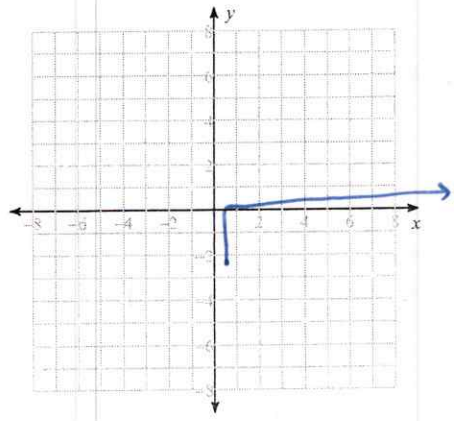
12) $\log_2 4$ 2

Sketch the graph.

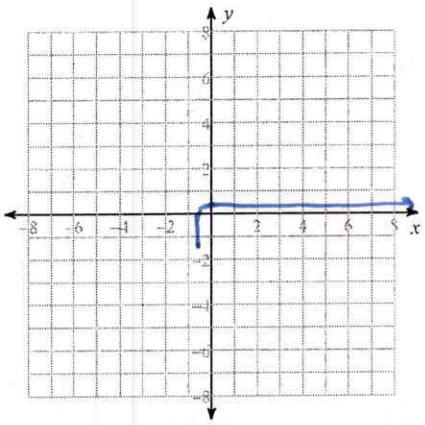
13) $y = \log_3 (x - 1) + 4$



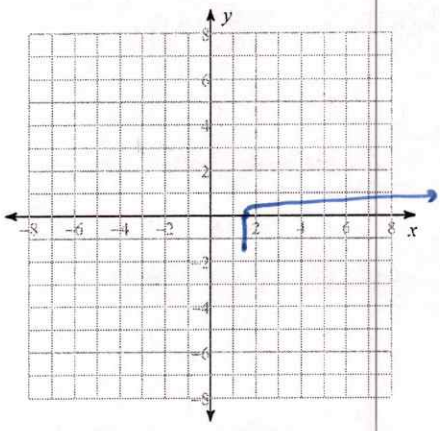
14) $y = \log_4 (x - 1) + 2$



15) $y = \log_6 (x+1) + 4$



16) $y = \log_6 (x-3) + 5$



Expand each logarithm.

17) $\log_2 \frac{10}{7^2}$

$= \log_2 10 - \log_2 7^2$

$\log_2 10 - 2\log_2 7$

18) $\log_4 (6 \cdot 11 \cdot 7)$

$\log_4 6 + \log_4 11 + \log_4 7$

19) $\log_8 \left(\frac{3}{10}\right)^6$

$6\log_8\left(\frac{3}{10}\right) \Rightarrow 6(\log_8 3 - \log_8 10)$

20) $\log_3 \sqrt[3]{12^3} \cdot \log_3 12^{3/3}$

$\log_3 12$

21) $\log_3 (5 \cdot 6 \cdot 11^3)$

$\log_3 5 + \log_3 6 + \log_3 11^3$

$\log_3 5 + \log_3 6 + 3\log_3 11$

22) $\log_7 (5 \cdot 3 \cdot 8^5)$

$\log_7 5 + \log_7 3 + 5\log 8$

Condense each expression to a single logarithm.

23) $\log_3 x - \log_3 y$

$\log_3\left(\frac{x}{y}\right)$

24) $6\log_3 x$

$\log_3 x^6$

25) $\frac{\ln x}{2}$

26) $\log_4 x - \log_4 y$

$\log_4\left(\frac{x}{y}\right)$

27) $5\log_5 z + \frac{\log_5 x}{2}$

$\log_5 z^5 + \frac{1}{2}\log_5 x$

$\log_5 z^5 + \log_5 x^{1/2} = \log_5 z^5 x^{1/2}$

28) $4\log 8 + 24\log 7$

$\log 8^4 + \log 7^{24}$

$\log 8^4 7^{24}$