AP Calculus AB
Log Review

Evaluate each expression.

1) $\log_3 \frac{1}{27}$

2) $\log_2 64$

Condense each expression to a single logarithm.

3) $6\log_5 u - \log_5 w - 2\log_5 v$

4) $6\log a + 6\log c - 18\log b$

Expand each logarithm.

5) $\log_6 \left(x \cdot y \cdot z^4\right)$

6) $\ln \left(\frac{a^4}{b}\right)^2$

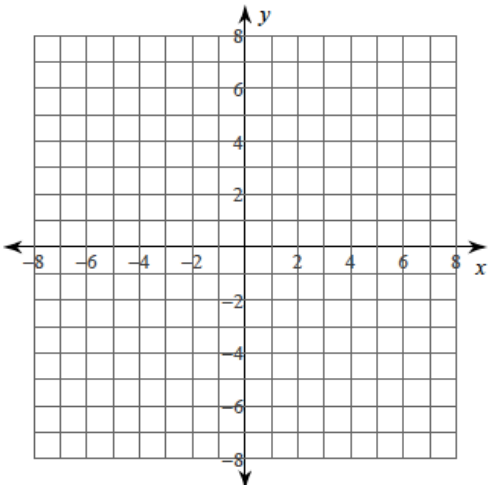
Identify the domain and range of each.

7) $y = \log_2 (3x - 9) + 3$

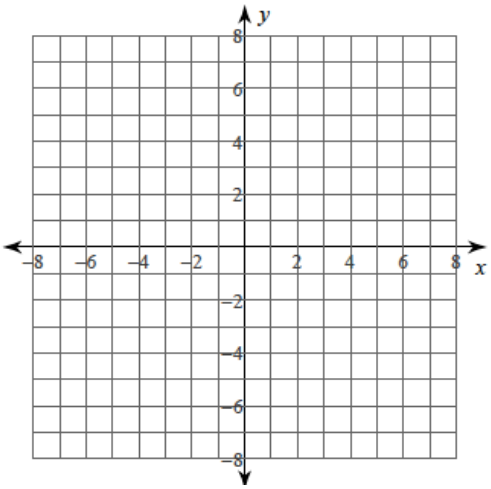
8) $y = \log_5 (4x + 7) + 1$

Identify the domain and range of each. Then sketch the graph.

9) $y = \log_5 (x + 2) - 5$



10) $y = \log_2 (x + 3) + 5$



Rewrite each equation in exponential form.

11) $\log_{16} 256 = 2$

12) $\log_{121} \frac{1}{11} = -\frac{1}{2}$

Use the properties of logarithms and the values below to find the logarithm indicated. Do not use a calculator to evaluate the logs.

13) $\log_4 9 \approx 1.6$
$\log_4 11 \approx 1.7$
$\log_4 6 \approx 1.3$
Find $\log_4 36$

14) $\log_3 10 \approx 2.1$
$\log_3 7 \approx 1.8$
$\log_3 8 \approx 1.9$
Find $\log_3 \frac{8}{3}$

Solve each equation.

15) $\log_9 3 - \log_9 (x+7) = 1$

16) $\log_6 3 + \log_6 3x^2 = 4$

17) $5 \cdot 15^{n+7} = 2$

18) $8 \cdot 18^{x-7} = 86$

19) $-6 + 3e^x = 8$

20) $\ln\sqrt{x+2} = 1$

Answers

1) -3

2) 6

3) $\log_5 \dfrac{u^6}{wv^2}$

4) $\log \dfrac{c^6 a^6}{b^{18}}$

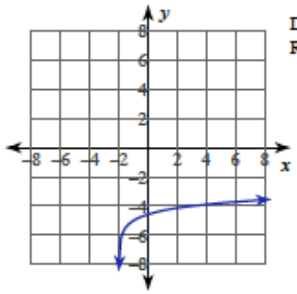
5) $\log_6 x + \log_6 y + 4\log_6 z$

6) $8\ln a - 2\ln b$

7) Domain: $x > 3$
Range: All reals

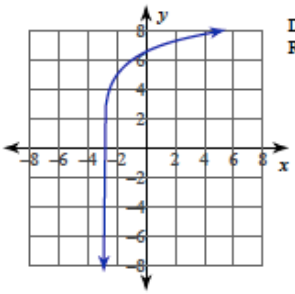
8) Domain: $x > -\dfrac{7}{4}$
Range: All reals

9)



Domain: $x > -2$
Range: All reals

10)



Domain: $x > -3$
Range: All reals

11) $16^2 = 256$

12) $121^{-\frac{1}{2}} = \dfrac{1}{11}$

13) 2.6

14) 0.9

15) $\left\{-\dfrac{20}{3}\right\}$

16) $\{12, -12\}$

17) $\log_{15} \dfrac{2}{5} - 7$

18) $\log_{18} \dfrac{43}{4} + 7$

19) $\ln \dfrac{14}{3} \approx 1.54$

20) $e^2 - 2 \cong 5.39$