

Assignment

Date _____ Period _____

Expand each logarithm.

1) $\log_4 \left(\frac{a}{b^3} \right)^4$

2) $\log_8 \left(\frac{6}{5^4} \right)^6$

3) $\log_7 \sqrt[3]{2 \cdot 5 \cdot 3}$

4) $\log_3 \left(\frac{x}{y^5} \right)^4$

5) $\log_4 (x \cdot y \cdot z^4)$

Condense each expression to a single logarithm.

6) $\log_4 12 + \log_4 7 + 4\log_4 5$

7) $10\log_6 2 + 2\log_6 5$

8) $\log a + \log b + 6\log c$

9) $\log a + \log b + 4\log c$

10) $10\log_8 u - 2\log_8 v$

Solve each equation.

11) $\log_{19} (b + 6) = \log_{19} (-3b - 3)$

12) $\log_6 (4n + 5) = \log_6 (10 - n)$

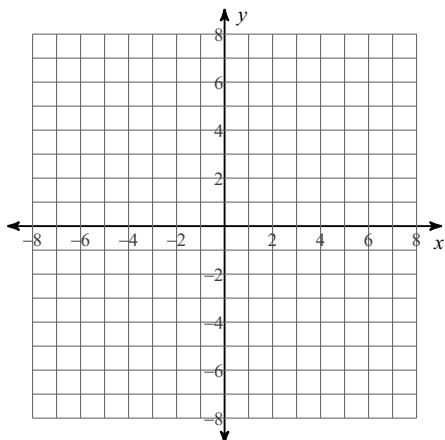
13) $\log (n + 8) = \log (2n - 1)$

14) $\log_4 (3n - 7) = \log_4 (-n + 9)$

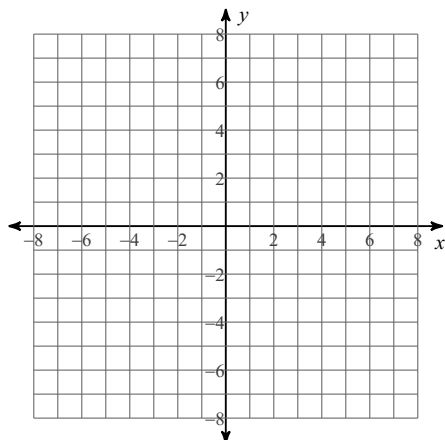
15) $\log_7 (2n - 3) = \log_7 (3n - 7)$

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

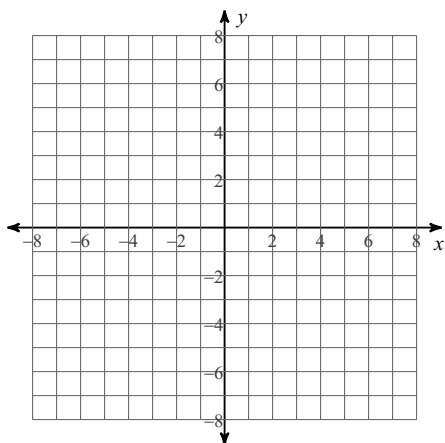
16) $y = \log_4 (x - 1) - 4$



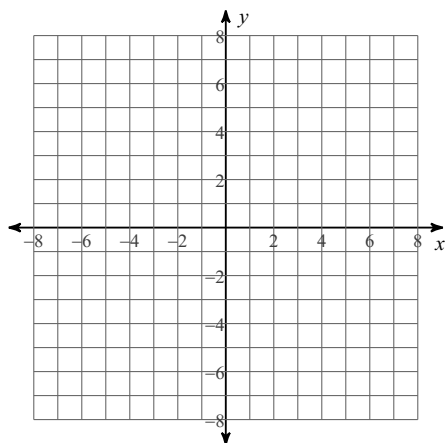
17) $y = \log_2 (x + 6) + 4$



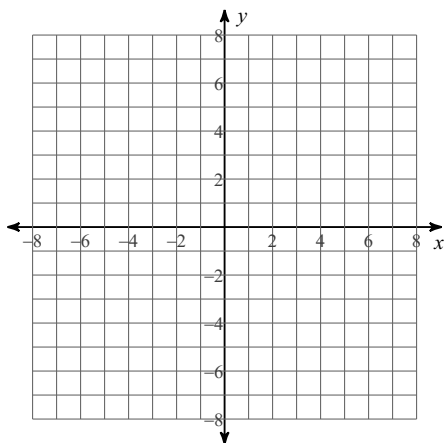
18) $y = \log_2 (x - 3) - 1$



19) $y = \log_6 (x - 1)$



20) $y = \log_2 (x + 3) - 2$



21) If Kim invests \$2000 at 4.25% interest compounded monthly, how long will it take for her investment to reach \$8,000.