

## Assignment

Date \_\_\_\_\_ Period \_\_\_\_\_

**Evaluate each expression.**

1)  $\log_4 16$

2)  $\log_9 3$

3)  $\log_{64} 4$

4)  $\log_5 25$

**Rewrite each equation in exponential form.**

5)  $\log_6 216 = 3$

6)  $\log_5 y = x$

7)  $\log_7 343 = 3$

8)  $\log y = x$

**Rewrite each equation in logarithmic form.**

9)  $x^y = 92$

10)  $x^{-17} = y$

11)  $5^2 = 25$

12)  $p^{15} = 118$

**Solve each equation.**

13)  $\log(1 - 3n) = \log(-2n + 4)$

14)  $\log(9 - 2p) = \log(-3p + 8)$

15)  $\log_{16}(2n + 9) = \log_{16}(-n + 3)$

16)  $\log_2(x - 2) = \log_2(2x - 9)$

$$17) \log_{12} (x^2 - 6) = \log_{12} 3$$

$$18) \log_3 (3a^2 + 9a) = \log_3 (-20 + 2a^2)$$

$$19) \log_4 (-7n - 2) = \log_4 (n^2 + 8)$$

$$20) \log_{17} (63 - n) = \log_{17} (n^2 - 3n)$$

$$21) -6 \log_2 (x - 5) = -24$$

$$22) 5 \log_3 (n - 6) = 0$$

**Condense each expression to a single logarithm.**

$$23) 5 \log_6 x - 4 \log_6 y$$

$$24) 5 \log_2 a + 3 \log_2 b$$

$$25) 24 \log_9 u + 4 \log_9 v$$

$$26) 4 \log_6 x - 5 \log_6 y$$

$$27) 6 \log_5 x + 12 \log_5 y + 6 \log_5 z$$

$$28) 9 \log_7 z + 9 \log_7 x - 3 \log_7 y$$

29)  $4\log_5 u + 4\log_5 w - 8\log_5 v$

30)  $6\log_5 x + 6\log_5 z - 18\log_5 y$

**Expand each logarithm.**

31)  $\log_3 (x^6 y^4)$

32)  $\log_3 (a^5 b^2)$

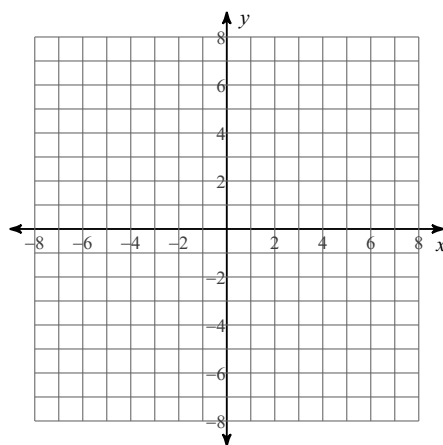
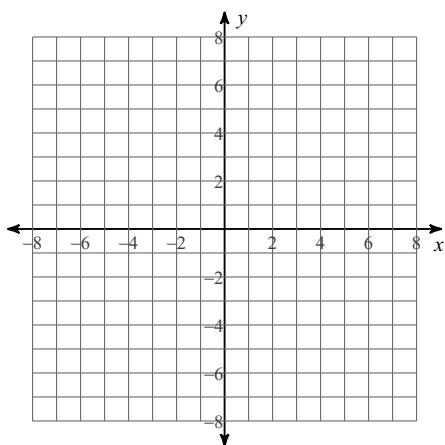
33)  $\log_3 \frac{x^3}{y^2}$

34)  $\log_7 \frac{a^3}{b^3}$

**Sketch the graph of each function.**

35)  $y = \log_3 (x - 2) - 2$

36)  $y = \log_4 (x + 3) + 4$



37)  $y = \log_2 (x + 4) - 1$

38)  $y = \log_2 (x + 6) - 4$

