

Log & Exp - Notes Day 1

Date _____ Period _____

Solve each equation.

1) $\log(9 - m) = \log 6$

2) $\log 4n = \log n$

3) $\log_{13}(3a - 7) = \log_{13} -2a$

4) $\log(4x + 6) = \log(-2x + 3)$

5) $\log_4 7 + \log_4 -4x = 2$

6) $\log_6(x + 4) + \log_6 9 = 2$

7) $\log_8 3x + \log_8 6 = \log_8 23$

8) $\log_3 x - \log_3(x + 4) = 4$

9) $4^{2n} = 4^{-2n}$

10) $3^{-n} = 81$

Condense each expression to a single logarithm.

11) $5\log_4 3 + \frac{\log_4 2}{2}$

12) $4\log_9 5 - 16\log_9 12$

13) $\frac{\log_5 7}{3} + \frac{\log_5 2}{3} + \frac{\log_5 3}{3}$

14) $5\log_8 u - 3\log_8 v$

Expand each logarithm.

15) $\log_8 (z\sqrt{x \cdot y})$

16) $\log_7 \left(\frac{x}{y^6}\right)^4$

17) $\log_6 \left(\frac{u}{v^4}\right)^2$

18) $\log_5 \left(\frac{8}{11^2}\right)^3$

Log & Exp - Notes Day 1

Date _____ Period _____

Solve each equation.

1) $\log(9 - m) = \log 6$

 $\{3\}$

2) $\log 4n = \log n$

No solution.

3) $\log_{13}(3a - 7) = \log_{13} -2a$

No solution.

4) $\log(4x + 6) = \log(-2x + 3)$

 $\left\{-\frac{1}{2}\right\}$

5) $\log_4 7 + \log_4 -4x = 2$

 $\left\{-\frac{4}{7}\right\}$

6) $\log_6(x + 4) + \log_6 9 = 2$

 $\{0\}$

7) $\log_8 3x + \log_8 6 = \log_8 23$

 $\left\{\frac{23}{18}\right\}$

8) $\log_3 x - \log_3(x + 4) = 4$

No solution.

9) $4^{2n} = 4^{-2n}$

 $\{0\}$

10) $3^{-n} = 81$

 $\{-4\}$

Condense each expression to a single logarithm.

$$11) 5\log_4 3 + \frac{\log_4 2}{2}$$
$$\log_4 (3^5 \sqrt{2})$$

$$12) 4\log_9 5 - 16\log_9 12$$
$$\log_9 \frac{5^4}{12^{16}}$$

$$13) \frac{\log_5 7}{3} + \frac{\log_5 2}{3} + \frac{\log_5 3}{3}$$
$$\log_5 \sqrt[3]{42}$$

$$14) 5\log_8 u - 3\log_8 v$$
$$\log_8 \frac{u^5}{v^3}$$

Expand each logarithm.

$$15) \log_8 (z\sqrt{x \cdot y})$$
$$\log_8 z + \frac{\log_8 x}{2} + \frac{\log_8 y}{2}$$

$$16) \log_7 \left(\frac{x}{y^6}\right)^4$$
$$4\log_7 x - 24\log_7 y$$

$$17) \log_6 \left(\frac{u}{v^4}\right)^2$$
$$2\log_6 u - 8\log_6 v$$

$$18) \log_5 \left(\frac{8}{11^2}\right)^3$$
$$3\log_5 8 - 6\log_5 11$$