

Solving Log Equations and Inequalities HW

Rewrite the following expressions using: $a = \log 2$, $b = \log 3$, $c = \log 5$, $d = \log 7$

1) $\log 32$

2) $\log 150$

3) $\log \frac{8}{135}$

4) $\log (5\sqrt[7]{4})$

5) $\log 280000$

6) $\log 0.0024$

Solve each equation.

7) $\log_8 x - \log_8 4 = \log_8 25$

8) $\log_3 x + \log_3 4 = 3$

9) $\log_8 2 + \log_8 (5x - 8) = 1$

10) $\log_3 4 + \log_3 (3x - 8) = \log_3 28$

$$11) \log_2 x - \log_2 (x - 3) = \log_2 63$$

$$12) \log_9 2x^2 - \log_9 2 = 4$$

$$13) \log_5 (4x^2 - 6) - \log_5 10 = 2$$

$$14) \log_8 (x + 10) + \log_8 (x + 8) = 1$$

$$15) \log_7 (3x^2 + 1) + \log_7 3 = 1$$

$$16) \log_8 (x^2 + 4) + \log_8 5 = \log_8 25$$

$$17) \log_5 (x - 9) - \log_5 4 \geq 1$$

$$18) \log_3 (x - 3) - \log_3 7 < \log_3 23$$

$$19) \log_6 8 - \log_6 (x - 1) \leq \log_6 24$$

$$20) \log_2 7 - \log_2 2x > 2$$

Solving Log Equations and Inequalities HW

Rewrite the following expressions using: $a = \log 2$, $b = \log 3$, $c = \log 5$, $d = \log 7$

1) $\log 32$

$5a$

2) $\log 150$

$2c + a + b$

3) $\log \frac{8}{135}$

$3a - 3b - c$

4) $\log (5\sqrt[7]{4})$ $c + \frac{2}{7}a$

5) $\log 280000$

$6a + 4c + d$

6) $\log 0.0024$

$b - 4c - a$

Solve each equation.

7) $\log_8 x - \log_8 4 = \log_8 25$

$\{100\}$

8) $\log_3 x + \log_3 4 = 3$ $\left\{\frac{27}{4}\right\}$

9) $\log_8 2 + \log_8 (5x - 8) = 1$

$\left\{\frac{12}{5}\right\}$

10) $\log_3 4 + \log_3 (3x - 8) = \log_3 28$

$\{5\}$

$$11) \log_2 x - \log_2 (x - 3) = \log_2 63$$

$$\left\{ \frac{189}{62} \right\}$$

$$12) \log_9 2x^2 - \log_9 2 = 4$$

$$\{81, -81\}$$

$$13) \log_5 (4x^2 - 6) - \log_5 10 = 2$$

$$\{8, -8\}$$

$$14) \log_8 (x + 10) + \log_8 (x + 8) = 1$$

$$\{-6\}$$

$$15) \log_7 (3x^2 + 1) + \log_7 3 = 1$$

$$\left\{ \frac{2}{3}, -\frac{2}{3} \right\}$$

$$16) \log_8 (x^2 + 4) + \log_8 5 = \log_8 25$$

$$\{1, -1\}$$

$$17) \log_5 (x - 9) - \log_5 4 \geq 1$$

$$\{x \geq 29\}$$

$$18) \log_3 (x - 3) - \log_3 7 < \log_3 23$$

$$\{3 < x < 164\}$$

$$19) \log_6 8 - \log_6 (x - 1) \leq \log_6 24 \quad \left\{ x \geq \frac{4}{3} \right\}$$

$$20) \log_2 7 - \log_2 2x > 2 \quad \left\{ 0 < x < \frac{7}{8} \right\}$$