30. $\log_8(-3x+6) \le \log_8(-4x+5)$

$-3x+6 \le -4x+5$

$x+6 \le 5$

$x \le -1$

$6 \le -x+5$

$1 \le -x$

$-1 \ge x$

$\log_5 125 = 3$

product property

$\log_b m + \log_b n = \log_b (mn)$

quotient property

$\log_b m - \log_b n = \log_b \left(\frac{m}{n}\right)$

power property

$\log_b m^p = p \log_b m$

$\log_3 2 + \log_3 6 = \log_3 12$

$\log_3 35 - \log_3 7 = \log_3 \frac{35}{7} = \log_3 5$

$2\log_7 8 = \log_7 8^2 = \log_7 64$

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1. $\log_2 5 + \log_2 7$

$\log_2 35$

2. $\log_7 48 - \log_7 8$

$\log_7 \frac{48}{8}$

$\log_7 6$

3. $2\log_5 6 - 2\log_5 2$

$\log_5 6^2 - \log_5 2^2$

$\log_5 36 - \log_5 4$

$\log_5 9$

4. $\log_4 13 + 4\log_4 3$

$\log_4 13 + \log_4 3^4$

$\log_4 13 + \log_4 81$

$\log_4 1053$

cannot take log of zero or negatives

5. $3\log_5 x - \log_5 4 = \log_5 16$

$\log_5 x^3 - \log_5 4 =$

$\log_5 \frac{x^3}{4} = \log_5 16$

$\frac{x^3}{4} = 16$

$\sqrt[3]{x^3} = \sqrt[3]{64}$

$x = 4$

6. $2\log_7 x = \log_7 27 + \log_7 3$

$\log_7 x^2 = \log_7 81$

$\sqrt{x^2} = \pm\sqrt{81}$

$x = \pm 9$

$x = 9$

8. $\log_6 x - \log_6(x-5) = \log_6 2$

$$\log_6 \frac{x}{x-5} = \log_6 2$$

$$\cancel{(x-5)}\frac{x}{\cancel{x-5}} = 2(x-5)$$

$$x = 2x - 10$$

$$-x = -10$$

$$x = 10$$

7. $\log_6(x-2) + \log_6(x+3) = \log_6 14$

$x^2 + 3x - 2x - 6$

$$\log_6(x^2 + x - 6) = \log_6 14$$

$$x^2 + x - 6 = 14$$

$$-14 \qquad -14$$

$$x^2 + x - 20 = 0$$