LAWS OF LOGS CONT'D.

Note Title 9/20/2011

EX WRITE AS A SINGLE LOG

(1) $\log(a+b) + \log(a-b)$

$\log_b (a+b)(a-b)$

$\log(a^2 - b^2)$

(2) $\log A - 3\log B + 5\log \sqrt[5]{C}$

$\log A - \log B^3 + \log((C)^{\frac{1}{5}})^5$

$\log A - \log B^3 + \log C$

$\log \frac{AC}{B^3}$

$\log \frac{A}{B^3} \cdot \frac{C}{1}$

$\log \frac{AC}{B^3}$

IE IF $x = \log_4 5$ AND $y = \log_4 3$

EXPRESS $\log_4 225$ IN TERMS OF x AND y

$$\log_4 225 = \log_4 (25 \times 9)$$

$$= \log_4 25 + \log_4 9$$

$$= \log_4 5^2 + \log_4 3^2$$

$$= 2\log_4 5 + 2\log_4 3$$

$$= 2x + 2y$$

DE SOLVE FOR x

(1) $2^x = 5$

$\log 2^x = \log 5$

$x \log 2 = \log 5$

$\frac{x \log 2}{\log 2} = \frac{\log 5}{\log 2}$

$x = 2.3219$

(2) $3^{x+2} = 5^{2x-3}$

$\log 3^{x+2} = \log 5^{2x-3}$

$(x+2)\log 3 = (2x-3)\log 5$

$$x\log 3 + 2\log 3 = 2x\log 5 - 3\log 5$$
$$-2x\log 5 \qquad\qquad -2x\log 5$$

$$x\log 3 - 2x\log 5 + 2\log 3 = -3\log 5$$
$$-2\log 3 \qquad\qquad -2\log 3$$

$$x\log 3 - 2x\log 5 = -3\log 5 - 2\log 3$$

$$\frac{x(\log 3 - 2\log 5)}{(\log 3 - 2\log 5)} = \frac{(-3\log 5 - 2\log 3)}{(\log 3 - 2\log 5)}$$

$$x = 3.3135$$

$$\log_3 7 = x$$

$$3^x = 7$$

$$\frac{x \log 3}{\log 3} = \frac{\log 7}{\log 3}$$

$$x = \underline{\qquad\qquad}$$

$$\log_3 7 = \frac{\log 7}{\log 3}$$

$$\log_8 2 = \frac{\log 2}{\log 8}$$

$$\frac{\log_4 3}{\log_4 7} \Rightarrow \frac{\frac{\log 3}{\log 4}}{\frac{\log 7}{\log 4}}$$

$$\frac{\log 3}{\log 4} \times \frac{\log 4}{\log 7} \qquad \frac{\log 3}{\log 7}$$

$$\log_2 3 \qquad \log_4 4$$

$$\frac{\log_4 3}{\log_4 2} \qquad \frac{\log_4 4}{\log_4 4}$$

$$\log_3 2$$

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