

"What did the vampire doctor say to his patient?"

n: $\log_3(2x-1) = 3$ o: $\log_7(3x-11) = \log_7(x-3)$ H: $\log_6 x + \log_6 3 = 2$

$3^3 = 2x-1$
 $27 = 2x-1$
 $28 = 2x$
 $14 = x$

$3x-11 = x-3$
 $2x = 8$
 $x = 4$

$\log_6 3x = 2$
 $6^2 = 3x$
 $36 = 3x$
 $12 = x$

S: $\log_2(x-3)^3 = 6$ F: $\frac{4\log_8 x}{2} = \frac{2\log_8 9}{2}$ I: $\log x + \log(x+2) = \log 3$

$\sqrt[3]{2^6} = \sqrt[3]{(x-3)^3}$
 $2^2 = x-3$
 $4 = x-3$
 $7 = x$

$2\log_8 x = \log_8 9$
 $\log_8 x^2 = \log_8 9$
 $\sqrt{x^2} = \sqrt{9}$
 $x = 3$ ~~$x = -3$~~

$\log(x^2+2x) = \log 3$
 $x^2+2x = 3$
 $x^2+2x-3 = 0$
 $(x+3)(x-1) = 0$
 ~~$x = -3$~~ $x = 1$

A: $2\log_2(x+6) - \log_2 16 = 2$ C: $\log_4(x^2-4) - \log_4(x+2) = 2$

$\log_2(x+6) - 4 = 2$
 $2\log_2(x+6) = 6$
 $\log_2(x+6) = 3$
 $2^3 = x+6$
 $8 = x+6$
 $2 = x$

$\log_4 \frac{(x^2-4)}{(x+2)} = 2$
 $\log_4 \frac{(x+2)(x-2)}{(x+2)} = 2$
 $\log_4(x-2) = 2$
 $4^2 = x-2$
 $16 = x-2$
 $18 = x$

T: $\log_2(5x+7) - \log_2 x = 2$ P: $\log(x+5) - \log(x-1) = \log(x+2) - \log(x-3)$

$\log_2 \frac{(5x+7)}{x} = 2$
 $2^2 = \frac{5x+7}{x}$
 $4x = 5x+7$
 $-x = 7$
 $x = -7$ **no solution**

$\log \frac{(x+5)}{(x-1)} = \log \frac{(x+2)}{(x-3)}$
 $(x+5)(x-3) = (x-1)(x+2)$
 ~~$x^2 + 2x - 15 = x^2 + x - 2$~~
 $x = 13$

S T O P T H A T C O F F I N