Bellwork Alg 2B Thursday, November 9, 2017

Solve each. Round to the nearest hundredth.

1. $\log_2(x+1) + \log_2(x-2) = 2$

2. $\log x = \log(x+2) + 1$

3. $3\ln 2x + 4 + 5\ln x = 7$

4. $\frac{1}{x-2} = \frac{2}{x+1} - \frac{1}{x}$

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Answers

Solve each. Round to the nearest hundredth.

1. $\log_2(x+1) + \log_2(x-2) = 2$

$\log_2[(x+1)(x-2)] = 2$

$\log_2(x^2 - x - 2) = 2$

$2^2 = x^2 - x - 2$

$4 = x^2 - x - 2$

$-4 \quad -4$

$0 = x^2 - x - 6$

$0 = (x-3)(x+2)$

-6, -3, 2, -1

$x = 3, -2$

$x = 3$

2. $\log x = \log(x+2) + 1$

$\log x - \log(x+2) = 1$

$\log\left(\frac{x}{x+2}\right) = 1$

$10^1 = \frac{x}{x+2}$

$(x+2)\cdot 10 = \frac{x}{x+2}\cdot(x+2)$

$10x + 20 = x$

$-x \quad -20 \quad -x \quad -20$

$\frac{9x}{9} = \frac{-20}{9}$

$x = -20/9$

NO SOL

3. $3\ln 2x + 4 + 5\ln x = 7$

$\ln(2x)^3 + 4 + \ln x^5 = 7$

$-4 \quad -4$

$\ln(8x^3) + \ln x^5 = 3$

$\ln(8x^3 \cdot x^5) = 3$

$\ln(8x^8) = 3$

$\frac{e^3}{8} = \frac{8x^8}{8}$

$\sqrt[8]{\frac{e^3}{8}} = \sqrt[8]{x^8}$

$x = \pm 1.12$

$x = 1.12$

4. $\frac{1}{x-2} = \frac{2}{x+1} - \frac{1}{x}$ $\quad \frac{2x}{x(x+1)} - \frac{x+1}{x(x+1)}$

$\frac{1}{x-2} = \frac{2}{x+1}\cdot\frac{x}{x} - \frac{1}{x}\cdot\frac{x+1}{x+1}$

$\frac{1}{x-2} = \frac{2x-(x+1)}{x(x+1)}$

$\frac{1}{x-2} = \frac{x-1}{x^2+x}$

$1\cdot(x^2+x) = (x-2)(x-1)$

$x^2 + x = x^2 - 3x + 2$

$x = -3x + 2$

$+3x \quad +3x$

$\frac{4x}{4} = \frac{2}{4}$

$x = 1/2$