

Bellwork Alg 2 Thursday, March 12, 2020

Solve each. Round to the nearest hundredth.

1. $36^{x+5} = 216^{x-1}$

2. $5^{x+2} = 3^{2x}$

3. $\log_3(x^2 + 8) = \log_3(7x - 4)$

Solve each. Round to the nearest hundredth.

ANSWERS

1. $36^{x+5} = 216^{x-1}$

$$(6^2)^{x+5} = (6^3)^{x-1}$$

$$6^{2(x+5)} = 6^{3(x-1)}$$

$$2(x+5) = 3(x-1)$$

$$2x + 10 = 3x - 3$$

$$\begin{array}{r} -2x \end{array} \quad \begin{array}{r} -2x \end{array}$$

$$10 = x - 3$$

$$\begin{array}{r} +3 \end{array} \quad \begin{array}{r} +3 \end{array}$$

$$x = 13$$

2. $5^{x+2} = 3^{2x}$

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

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

$$\begin{array}{r} x \log 5 + 2 \log 5 \\ - x \log 5 \end{array} = \begin{array}{r} 2x \log 3 \\ - x \log 5 \end{array}$$

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

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

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

$$x = 5.48$$

3. $\log_3(x^2 + 8) = \log_3(7x - 4)$

$$\begin{array}{r} x^2 + 8 \\ - 7x + 4 \end{array} = \begin{array}{r} 7x - 4 \\ - 7x + 4 \end{array}$$

$$x^2 - 7x + 12 = 0$$

$$(x-3)(x-4) = 0$$

$$x = 3, 4$$

$$\begin{array}{r} +12 \\ -3 \quad -4 \\ -7 \end{array}$$