General Algebra II   Worksheet #8   Unit 12   Selected Solutions

Solve each of the following equations without using a calculator.

1. $4^{(x-1)} = 32$

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

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

$2x - 2 = 5$

$2x = 7$

$x = 7/2$

3. $3^{(5x+1)} = 9$

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

$5x + 1 = 2$

$5x = 1$

$x = 1/5$

5. $\text{Log}_5 x = 3$

$x = 5^3$

$x = 125$

7. $\text{Log}_{25} x = 0.5$

$x = 25^{0.5}$

$x = 5$

Solve each of the following equations. Show your process neatly organized. Express your solutions rounded to the nearest hundredth. (You will need a calculator for these.)

12. $4^{(3x-2)} = 60$

$\text{Log } 4^{(3x-2)} = \text{Log } 60$

$(3x - 2)\text{Log } 4 = \text{Log } 60$

$3x\text{Log } 4 - 2\text{Log } 4 = \text{Log } 60$

$3x\text{Log } 4 = \text{Log } 60 + 2\text{Log } 4$

$x = \dfrac{\text{Log } 60 + 2\text{Log } 4}{3\text{Log } 4} \approx 1.65$

13. $e^{(x+5)} = 50$

$\ln e^{(x+5)} = \ln 50$

$(x + 5)\ln e = \ln 50$

$x + 5 = \ln 50$

$x = \ln 50 - 5 \approx -1.09$

15. $\text{Log}_3 x = 3.1$

$x = 3^{3.1} \approx 30.14$

19. $\ln x = 1.3$

$x = e^{1.3} \approx 3.67$