Bellwork Thursday, March 20, 2014

1. $5 \cdot 3^{2x-1} - 4 = 13$

$3^{2x-1} = 3.4$

$\log_3 3.4 = 2x-1$

$x = 1.06$

2. $\log 4x + \log x = 2$

$\log 4x^2 = 2$

$\sqrt{10^2} = \sqrt{4x^2} \quad \pm 10 = \pm 2x$

$\pm 5 = x$

$\frac{100}{4} = \frac{4x^2}{4}$

$25 = x^2$

$x = 5$

3. $\frac{1}{3}\log_2 x + \log_2 5 = 4$

$\log_2 \sqrt[3]{x} + \log_2 5 = 4$

$\log_2 5\sqrt[3]{x} = 4$

$2^4 = 5\sqrt[3]{x}$

$\frac{16}{5} = \frac{5\sqrt[3]{x}}{5}$

$(3.2)^3 = (\sqrt[3]{x})^3$

$32.768 = x$

$3\left(\frac{1}{3}\log_2 x + \log_2 5 = 4\right)$

2nd method to solve previous problem.

$\log_2 x + 3\log_2 5 = 12$

$\log_2 125x = 12$

$2^{12} = 125x \rightarrow$ x = 32.768

4. $\log_4(2x+7) = \log_4(x) + 2$

$\log_4(2x+7) - \log_4(x) = 2$

$\log_4 \frac{2x+7}{x} = 2$ $\quad 16x = 2x+7$

$\frac{16}{1} = \frac{2x+7}{x}$ $\quad 14x = 7$

$x = \frac{1}{2}$