Sec 10-3 continued

Solving Equations involving Logs.

Strategies: Use product, quotient, or power properties to get a single log base on both sides of the equation. Then you can "drop" the $\log_b$ and solve!

We'll try p. 614 #12-16 now!

(12.) $\log_2 5 + \log_2 x = \log_2 15$

$\log_2 (5x) = \log_2 15$

$5x = 15$ therefore $x = 3$

(13.) $\log_5 16 - \log_5 2t = \log_5 2$

$\log_5 \frac{16}{2t} = \log_5 2$

$(2t)\frac{16}{2t} = 2(2t) \rightarrow 16 = 4t \rightarrow t = 4$

(14) $\log_{10} 7 + \log_{10}(n-2) = \log_{10} 6n$

$\log_{10} 7(n-2) = \log_{10} 6n$

$7n - 14 = 6n$

$-7n \quad -7n$

$-14 = -n \rightarrow n = 14$

(5) Need Log Form

$\log_2(y+2) - (1) = \log_2(y-2)$

$\log_2(y+2) - \log_2 2 = \log_2(y-2)$

Think: $2^{\boxed{1}} = 2$

$\log_2 \frac{y+2}{2} = \log_2(y-2)$

$\frac{2(y+2)}{2} = 2(y-2) \rightarrow y+2 = 2y-4 \rightarrow y = 6$

(16) pH Tomato juice = 4.1, pH Baking Soda = 8.5

* pH scale is "base 10". Tomato is 25,119 x more Acidic!

$\log_{10} t = 4.1 \quad \log_{10} b = 8.5$

$10^{4.1} = t = 12,589 \quad 10^{8.5} = b = 316,227,766$