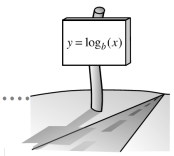
CW#___ Name:_____

5.2.3 How can I solve it?

Solving Exponential and Logarithmic Equations



#79 Eduardo thinks he can solve $6^x = 20$ in just *one* step! He says the solution is $x = \log_6(20)$.

a. Is Eduardo correct? Explain why or why not.

b. Is Eduardo's solution practical? Explain.

c. Anita says she knows how to solve $6^x = 20$ using logarithms in another way. She tells Eduardo to start by taking the log (base 10) of both sides and then apply the Power Property of Logarithms. Use Anita's method to solve for x.

d. Eduardo's older brother Lemuel, who is taking Calculus, looks at Eduardo's equation and says, *"Just take the natural log of both sides."* Try Lemuel's method. Does it work?

e. If you have not done so already, use a calculator to get a numerical answer for each solution. Are all of your solutions equivalent?

#80 Solve each of the following equations using a method of your choice. Begin by estimating a solution. Then solve the equation and give both an exact answer and an approximate answer. Be ready to share your strategies with the class.

a. $1.05^x = 2$

b. $15(3)^x = -6$

c. $-12(10)^x + 3 = -3$

#82 SOLVING LOGARITHMIC EQUATIONS
Solve each of the following equations. Give exact solutions.

a. $\log_7(x^2) = \log_7(8x - 15)$	b. $\log_2(x^3) + \log_2(x) - \log_2(2x) = 6$
c. $\log_7(x - 4) + \log_7(x + 2) = 1$	d. $3\ln(x) = \ln(e^5) - 2$
e. $-9\ln(x + 1) = -8$	f. $\ln(x + 8) - \ln(x - 4) = 10$