Lesson 62 Objective: SWBAT use exponentials and logarithms to complete application problems.

Kickoff

Complete questions 9-10 and 23-24 on your homework sheet from last night!

9)
$$\log_{3}(x+4) + \log_{3}(x-2) = 3$$

$$|\log_{3}(x+4) + \log_{3}(x-2) = 3$$

$$|\log_{4}(x^{2} + 3x) - \log_{4}(x+5) = 1$$

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23)
$$\log_{5} 4x^{2} + \log_{5} 2 = \log_{5} 18$$

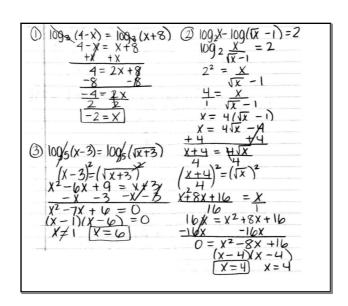
$$\log_{5} (4x^{2}) = \log_{5} 18$$

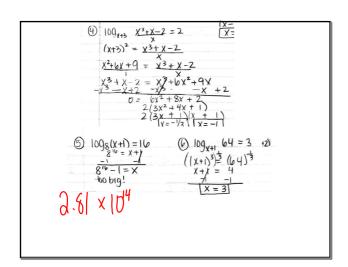
$$\log_{5} 8x^{2} = \log_{5} 18$$

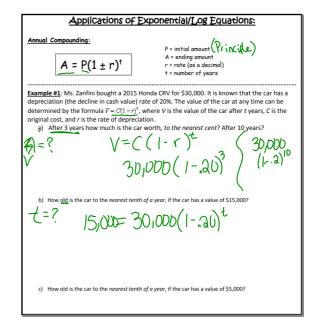
$$24) \log_{5} (x^{2} - 1) - \log_{5} 4 = \log_{5} 20$$

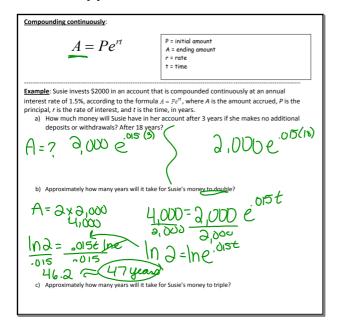
$$\log_{5} 8x^{2} = \log_{5} 18$$

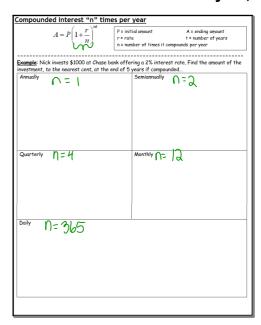
$$\frac{x^{2} - 1}{4} = \log_{5} 20$$











Population Growth/Decay	A= ending amount	r = rate
$A = I(1 \pm r)^t$	I = initial population	t = time in years
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Example: A town had a population of 27, 000 in the year 2000 It is increasing at a rate of 2.5% each year. Find the year the population will be 50,000. (kint ase the calculator to graph)		
$A = I(1+r)^t$ $50,000 = 27,000(1+.025)^t$		
50,000=27,000 (1	+ .025)	
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Radioactive Decay $f(t) = S\left(\frac{1}{2}\right)^{\frac{t}{h}}$	F(t) = the amount of the substance that remains S = Initial Mass h = half life t = time in years	
Example: The half life of a radioactive element is 25 years. The initial mass is 10 grams. A) Write an equation of the exponential function that models the radioactive decay of the element.		
B) How many grams of the substance remains after 40 years?		
C) How long will it take to ha	ive less than 1 gram left? (hint: use calculator to graph)	

Homework/Classwork
Evens