
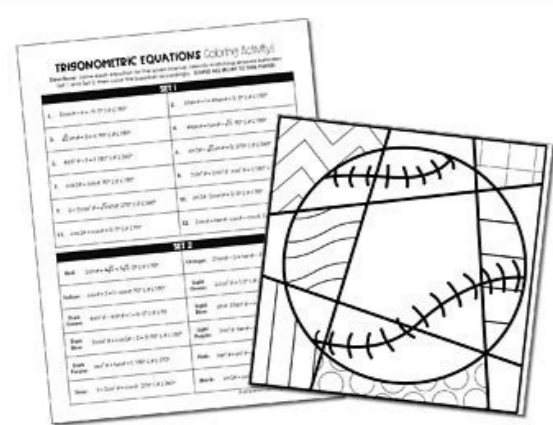


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Exponential Equations

- Growth: $A = A_0(1+r)^t$
- Decay: $A = A_0(1-r)^t$
- A: final amount
- A_0 : initial amount
- r: rate as a decimal
- t: time

Expanding Logs

- Multiplication \rightarrow addition
- Division \rightarrow subtraction
- Exponents \rightarrow coefficients
- $\sqrt{\quad} = 1/2$ power
- * Multiple "logs" in final

Condensing Logs

- Addition \rightarrow multiplication
- Subtraction \rightarrow division
- Coefficients \rightarrow exponents
- * "log" once in final

Solving Equations

- $\log = \log \rightarrow$ arguments are equal
- $\log = \text{a number} \rightarrow$ convert to exponential form
- variable in exponent: isolate exponential, \log/\ln both sides
- * Always condense first.

Half-Life

- * Given half-life: $A = A_0(\frac{1}{2})^{t/\text{half-life}}$
- Let $A_0 = 1$
- A = resulting amount
- * Asked to find half-life:
 - ~ Use the equation given in the problem
 - ~ Initial amount: 1
 - ~ Final amount: $1/2$
 - ~ Solve for t

Logarithmic/Exponential Form

$\log_{\text{base}}(\text{argument}) = \text{exponent}$
 \uparrow
 $\text{base}^{\text{exponent}} = \text{argument}$

Natural Log

- * $\log_e \Rightarrow \ln$
- * $\ln(e) = 1$

Problem #	Function Name	Equation	Graph
1	Linear	$y = 2x + 3$	
2	Linear	$y = -x + 5$	
3	Linear	$y = 3x - 2$	
4	Linear	$y = -2x + 1$	
5	Linear	$y = 4x + 7$	
6	Linear	$y = -3x + 4$	
7	Linear	$y = 5x - 1$	
8	Linear	$y = -4x + 6$	
9	Linear	$y = 6x + 2$	
10	Linear	$y = -5x + 3$	
11	Linear	$y = 7x - 4$	
12	Linear	$y = -6x + 5$	
13	Linear	$y = 8x - 6$	
14	Linear	$y = -7x + 7$	
15	Linear	$y = 9x - 8$	
16	Linear	$y = -8x + 9$	
17	Linear	$y = 10x - 10$	
18	Linear	$y = -9x + 11$	
19	Linear	$y = 11x - 12$	
20	Linear	$y = -10x + 13$	
21	Linear	$y = 12x - 14$	
22	Linear	$y = -11x + 15$	
23	Linear	$y = 13x - 16$	
24	Linear	$y = -12x + 17$	
25	Linear	$y = 14x - 18$	
26	Linear	$y = -13x + 19$	
27	Linear	$y = 15x - 20$	
28	Linear	$y = -14x + 21$	
29	Linear	$y = 16x - 22$	
30	Linear	$y = -15x + 23$	
31	Linear	$y = 17x - 24$	
32	Linear	$y = -16x + 25$	
33	Linear	$y = 18x - 26$	
34	Linear	$y = -17x + 27$	
35	Linear	$y = 19x - 28$	
36	Linear	$y = -18x + 29$	
37	Linear	$y = 20x - 30$	
38	Linear	$y = -19x + 31$	
39	Linear	$y = 21x - 32$	
40	Linear	$y = -20x + 33$	
41	Linear	$y = 22x - 34$	
42	Linear	$y = -21x + 35$	
43	Linear	$y = 23x - 36$	
44	Linear	$y = -22x + 37$	
45	Linear	$y = 24x - 38$	
46	Linear	$y = -23x + 39$	
47	Linear	$y = 25x - 40$	
48	Linear	$y = -24x + 41$	
49	Linear	$y = 26x - 42$	
50	Linear	$y = -25x + 43$	

- What Should You be Able to do for the Exponential Functions Mini Quiz?!**
- Write functions to model exponential growth and decay situations.
 - Use negative exponents to create models that represent situations of exponential decay.
 - Analyze exponential situations in terms of evaluating the function, determining a length of time, and determining a percent of increase or decrease
 - Determine whether a model is linear or nonlinear and increasing or decreasing
 - Apply the ideas of simple and compound interest to determine total amounts, principal amounts, interest rates, and formulas

Name : _____ Score : _____
 Teacher : _____ Date : _____

Logarithmic Equations

- Solve each given equation.
- $\log_9 q = \log_9 (4q - 6)$
 - $\log_4 (5x + 10) = \log_4 (9x + 3)$
 - $\log_3 s + \log_3 3 = 2$
 - $\log_4 q + \log_4 6 = \log_4 4$
 - $\log_6 9 + \log_6 3w^2 = \log_6 7$
 - $\log_3 (5p^2 + 180) = \log_3 65$
 - $\log_4 2q = \log_4 (6q + 7)$
 - $\log_7 (5x + 3) = \log_7 (9x - 9)$
 - $\log_2 n + \log_2 4 = 2$
 - $\log_5 n + \log_5 8 = \log_5 10$
 - $\log_5 8 + \log_5 4w^2 = \log_5 4$
 - $\log_9 (9b^2 + 243) = \log_9 108$
 - $\log_6 8r = \log_6 (5r + 7)$
 - $\log_7 (7p + 5) = \log_7 (5p - 9)$

