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Lesson 4.5: Exponential & Logarithmic Equations

Exponential Equations

Guidelines for Solving Exponential Equations:

Step 1:	
Step 2:	
Step 3:	

Examples: Solve each equation and round your answer to three decimal places.

1. $3^{x+2} = 9$ **(hint: do you NEED to use log?)**	2. $3^{x+2} = 7$
3. $8e^{2x} = 20$	4. $e^{3-2x} = 4$
5. $e^{2x} - e^{x} - 6 = 0$ **(hint: think quadratic!)**	6. $3xe^{x} + x^{2}e^{x} = 0$ **(hint: factor!)**

Logarithmic Equations

Guidelines for Solving Logarithmic Equations:

Step 1:	
Step 2:	
Step 3:	

1. $\ln(x) = 8$	2. $\log_2(25 - x) = 3$
3. $4 + 3\log(2x) = 16$	4. $\log(x + 2) + \log(x - 1) = 1$

Solving Logarithmic Equations Graphically

Example: $x^2 = 2\ln(x + 2)$

1. Move all terms to one side of the equation: $0 = 2\ln(x + 2) - x^2$
2. Then, graph $y = 2\ln(x + 2) - x^2$
3. Finally, the x −intercept(s) on the graph are the solution(s) to the equation.

SOLUTION: