

Algebra 2: Solving Exponential and Logarithmic Equations

Name: _____ Hour: _____

Solve the following equations using one of the following methods.

Method 1:

Convert bases to be the same (Find Common Base), Then set exponents equal to each other. Use this when you have "One term = One term" and you can find a common base between them.

1. $25^{x-1} = 125^{4x}$

3. $36^{x-9} = 6^{2x}$

2. $3^{x-7} = 27^{2x}$

4. $8^{5x} = 16^{3x+4}$

Method 2: Solve by converting to an Exponential expression. Use this when you have your variable inside a log function, AKA Something like: $\log(x + 1) = 5$. Make sure to condense logs first.

5. $\log_2 2x + \log_2 6x = 108$

8. $2 \ln(-x + 2) + 7 = 14$

6. $\frac{1}{2} * \log_6 16x = 3$

9. $-5 + 2 \ln(3x + 6) = 5$

7. $2 \log 3x - \log x = 27$

10. $3 \log_3(x - 5) = 3$