# HOMEWORK: SOLVING LOG EQUATIONS

NAME: _____ DAY 5 DUE: _____

Solve the exponential equations.

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| 1. $5^{x-4} = 25^{x-6}$ | 2. $8^{x-1} = 32^{3x-2}$ |
| 3. $36^{5x+2} = \left(\frac{1}{6}\right)^{11-x}$ | 4. $25^{10x+8} = \left(\frac{1}{125}\right)^{4-2x}$ |

Solve the logarithmic equations.

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| 5. $\log_5(5x+9) = \log_5 6x$ | 6. $\ln(4x-7) = \ln(x+11)$ |
| 7. $\ln(x+19) = \ln(7x-8)$ | 8. $\log_5(2x-7) = \log_5(3x-9)$ |

Solve the equations. Check for extraneous solutions.

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| 9. $\log_4 x = -1$ | 10. $\log_2(x-4) = 6$ |
| 11. $\log_2 x + \log_2(x-2) = 3$ | 12. $\log_4(-x) + \log_4(x+10) = 2$ |
| 13. $\log_6 3x + \log_6(x-1) = 3$ | 14. $\log_3(x-9) + \log_3(x-3) = 2$ |

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| 15. $3^{x+4} = 6^{2x-5}$ | 16. $10^{3x-8} = 2^{5-x}$ |
| 17. $\log_2(x+1) = \log_8 3x$ | 18. $\log_3 x = \log_9 6x$ |

19. One hundred grams of radium are stored in a container. The amount R (in grams) of radium present after t years can be modeled by $R = 100e^{-0.99943t}$. After how many years will only 5 grams of radium be left?

20. You deposit $800 in an account that pays 2.25% annual interest compounded continuously. About how long will it take for the balance to triple?