# 4.3 Logarithmic Equations

Name:_____

Solve for x. Do not use a calculator.

1. $2^{5x+2} = 2^{3x-4}$

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

3. $3^{x-1} = \sqrt{3}^{x+1}$

4. $(\frac{1}{8})^{x-1} = (\frac{1}{4})^{1-x}$

5. $\log_x 81 = 2$

6. $\log_3 x = -3$

7. $\log_4 x = \frac{-5}{2}$

8. $\log_8 x = \frac{-4}{3}$

9. $\log_x 81 = -2$

10. $\log_x 64 = -3$

11. $\log_{\sqrt{2}} x = 8$

12. $\log_2(3x-4) = 3$

13. $\log_5 x = 2\log_5 10$

14. $\ln x = \ln 2 - \ln 5$

15. $\ln x = \ln e^2 - 1$

16. $\ln(x - 2) - \ln 2 = \ln 3 - \ln(x - 1)$

17. $e^x = 1$

18. $e^x = 2$

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

20. $\ln x = \sqrt{3}$

21. $\log x + \log(x - 9) = 1$

22. $\log_3(x - 4) + \log_3(x + 4) = 2$

23. $2^x = 10$

24. $2^x = 3^{x-1}$

25. $3^{x+2} = 5^{x-1}$