

Name: \_\_\_\_\_  
PCH: Solving Equations Using Logarithms

Date: \_\_\_\_\_  
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Solve each equation.

1.  $2\log x + \log 5 = \log 125$

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

3.  $\log(x) + \log(x+2) = \log 8$

4.  $2\log(x-3) = \log x + \log 4$

5.  $\log(x-4) - \log(x+1) = \log 6$

6.  $\log(x^2 + 4x) - \log 5 = 0$

7.  $\ln 3 - \frac{1}{3}\ln x = 0$

8.  $\log(x^2 + 9x) = 1$

9.  $\log_2(6x+5) + \log_2 x = 2$

10.  $\log(x^2 - 21x) = 2$

11.  $\frac{\log x}{\log(x-2)} = 2$

12.  $\ln x = 3$

13.  $\ln e^2 + \ln e^3 = x$

14.  $\log x^2 = 2\log x$

15.  $\log x^2 = (\log x)^2$

16.  $\log_2(\log_3(\log_5 x)) = 0$

17.  $\log(\log_6(\log(\log x))) = 0$

18.  $\log_3 x + \log_9 x + \log_{81} x = 7$

19.  $x^{\log x} = 100x$

20.  $x^{\log x} = 1000x^2$

21.  $\log x + \frac{1}{\log x} = \frac{5}{2}$

22.  $4^{\log_2 x} + x^2 = 8$

23.  $4^{\log_{16} 27} = 3^x$

24.  $10^{(1+\log x)} = 50$

25.  $\log 3 = x \log_2 3$

26. Find the value of the product:  $(\log_2 3)(\log_3 4)(\log_4 5)\dots(\log_{31} 32)$

27. If  $b = \log_3 x$ , solve for  $x$ :  $\log_b(\log_3 x^2) = 2$

28. Find the numerical value of  $(\log_a b^2)(\log_b c^2)(\log_c a^2)$