Name_____

Solving Logarithms & Exponential Equations

Solve each equation. Exact answers only.

1. $\left(\frac{1}{6}\right)^{-3v} = 216^{3v}$

2. $\left(\frac{1}{4}\right)^{2b} = 64$

3. $125^{1-p} = 625$

4. $\left(\frac{1}{9}\right)^{2-2x} = 27$

5. $\frac{625^{-3x}}{\left(\frac{1}{5}\right)^{2x+1}} = 5^3$

6. $25^{2-n} \cdot 125^{-3n+2} = 125$

Solve each equation. Round to three decimal places.

7. $-4.5 \cdot 11^{-10n} = -94$

8. $6^{k-2} = 11^{-2k+1}$

9. $-2 \cdot 6^{2n+5} = -99$

10. $14^{9m-2} + 4 = 39$

11. $-8 \cdot 11^{-2b} + 7 = -80$

12. $6 \cdot 9^{-3k} + 10 = 75.5$

13. $\log_8(-3x + 10) = \log_8(5x - 9)$

14. $\log_{17}(-4x - 1) = \log_{17}(-3x + 4)$

15. $\log_{14}(n^2 + 7n) = \log_{14}(7 + n)$

16. $\log_8(12p - 2) = \log_8(p^2 + 18)$

17. $\log x - \log(x - 2) = 1$

18. $\log_3(x - 6) - \log_3 x = \log_3 12$

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19. $\log_9 10 - \log_9 5x = 2$

20. $\log_9 x + \log_9(x + 11) = \log_9 42$

21. $\log_5 x + \log_5(x + 4) = 1$

22. $\log_9 2 + \log_9(x^2 + 6) = \log_9 61$