Name _____ Date _____ Class _____

LESSON 7-5

Practice B

Exponential and Logarithmic Equations and Inequalities

Solve and check.

1. $5^{2x} = 20$

2. $12^{2x-8} = 15$

3. $2^{x+6} = 4$

4. $16^{5x} = 64^{x+7}$

5. $243^{0.2x} = 81^{x+5}$

6. $25^{x} = 125^{x-2}$

7. $\left(\frac{1}{2}\right)^{x} = 16^{2}$

8. $\left(\frac{1}{32}\right)^{2x} = 64$

9. $\left(\frac{1}{27}\right)^{x-6} = 27$

Solve.

10. $\log_4 x^5 = 20$

11. $\log_3 x^6 = 12$

12. $\log_4 (x-6)^3 = 6$

13. $\log x - \log 10 = 14$

14. $\log x + \log 5 = 2$

15. $\log (x+9) = \log (2x-7)$

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

17. $\log x^2 + \log 25 = 2$

18. $\log (x-1)^2 = \log (-5x-1)$

Use a table and graph to solve.

19. $2^{x-5} < 64$

20. $\log x^3 = 12$

21. $2^x 3^x = 1296$

Solve.

22. The population of a small farming community is declining at a rate of 7% per year. The decline can be expressed by the exponential equation $P = C(1-0.07)^t$, where P is the population after t years and C is the current population. If the population was 8,500 in 2004, when will the population be less than 6,000?