7-4 Practice
Solving Logarithmic Equations and Inequalities

Solve each equation.

1. $x + 5 = \log_4 256$

2. $3x - 5 = \log_2 1024$

3. $\log_3 (4x - 17) = 5$

4. $\log_5 (3 - x) = 5$

5. $\log_{13} (x^2 - 4) = \log_{13} 3x$

6. $\log_3 (x - 5) = \log_3 (3x - 25)$

Solve each inequality.

7. $\log_8 (-6x) < 1$

8. $\log_9 (x + 2) > \log_9 (6 - 3x)$

9. $\log_{11} (x + 7) < 1$

10. $\log_{81} x \le 0.75$

11. $\log_2 (x + 6) < \log_2 17$

12. $\log_{12} (2x - 1) > \log_{12} (5x - 16)$

13. $\log_9 (2x - 1) < 0.5$

14. $\log_{10} (x - 5) > \log_{10} 2x$

15. $\log_3 (x + 12) > \log_3 2x$

16. $\log_3 (0.3x + 5) > \log_3 (x - 2)$

17. $\log_2 (x + 3) < \log_2 (1 - 3x)$

18. $\log_6 (3 - x) \le \log_6 (x - 1)$

19. WILDLIFE An ecologist discovered that the population of a certain endangered species has been doubling every 12 years. When the population reaches 20 times the current level, it may no longer be endangered. Write the logarithmic expression that gives the number of years it will take for the population to reach that level.