NAME _____ DATE _____ PERIOD _____

7-4 Skills Practice

Solving Logarithmic Equations and Inequalities

Solve each equation.

1. $3x = \log_6 216$

2. $x - 4 = \log_3 243$

3. $\log_4 (4x - 20) = 5$

4. $\log_9 (3 - x) = \log_9 (5x - 15)$

5. $\log_{81} (x + 20) = \log_{81} (6x)$

6. $\log_9 (3x^2) = \log_9 (2x + 1)$

7. $\log_4 (x - 1) = \log_4 (12)$

8. $\log_7 (5 - x) = \log_7 (5)$

9. $\log_x (5x) = 2$

Solve each inequality.

10. $\log_5 (-3x) < 1$

11. $\log_6 x > \log_6 (4 - x)$

12. $\log_{10} (x - 3) < 2$

13. $\log_2 (x - 5) > \log_2 (3)$

14. $\log_7 (8x + 5) > \log_7 (6x - 18)$

15. $\log_9 (3x - 3) < 1.5$

16. $\log_{10} (2x - 2) < \log_{10} (7 - x)$

17. $\log_9 (x - 1) > \log_9 (2x)$

18. $\log_{16} x \geq 0.5$

19. $\log_3 \left(\frac{x-3}{4} + 5\right) > \log_3 (x + 2)$

20. $\log_5 (3x) < \log_5 (2x - 1)$

21. $\log_3 (7 - x) \leq \log_3 (x + 19)$