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

Solve each inequality.

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

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

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

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

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

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

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

14. $\log_3 (7 - x) \le \log_3 (x + 19)$

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