

**8-2 Skills Practice****Solving Exponential Equations and Inequalities****Solve each equation.**

1.  $25^{2x+3} = 25^{5x-9}$

2.  $9^{8x-4} = 81^{3x+6}$

3.  $4^{x-5} = 16^{2x-31}$

4.  $4^{3x-3} = 8^{4x-4}$

5.  $9^{-x+5} = 27^{6x-10}$

6.  $125^{3x-4} = 25^{4x+2}$

**Solve each inequality.**

7.  $\left(\frac{1}{36}\right)^{6x-3} > 6^{3x-9}$

8.  $64^{4x-8} < 256^{2x+6}$

9.  $\left(\frac{1}{27}\right)^{3x+13} \leq 9^{5x-\frac{1}{2}}$

10.  $\left(\frac{1}{9}\right)^{2x+7} \leq 27^{6x-12}$

11.  $\left(\frac{1}{8}\right)^{-2x-6} > \left(\frac{1}{32}\right)^{-x+11}$

12.  $9^{9x+1} < \left(\frac{1}{243}\right)^{-3x+5}$

**Write an exponential function whose graph passes through the given points.**

13. (0, 3) and (3, 375)

14. (0, -1) and (6, -64)

15. (0, 7) and (-2, 28)

16.  $(0, \frac{1}{2})$  and (2, 40.5)

17. (0, 15) and (1, 12)

18. (0, -6) and (-4, -1536)

19.  $(0, \frac{1}{3})$  and (3, 9)

20. (0, 1) and (6, 4096)

21. (0, -2) and (-1, -4)