7-2 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. $\left(0, \frac{1}{2}\right)$ and (2, 40.5)

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

18. (0, –6) and (–4, –1536)

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

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

21. (0, –2) and (–1, –4)