

Name: _____ Date: _____

Solving Exponential Functions

Solve each equation:

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

2. $9^{x-5} = 27$

3. $5^{2x+3} = 625$

4. $9^x = 27^{2x+8}$

5. $3^{2x+3} = 27^{x+1}$

6. $125^x = 25^{x+1}$

7. $4^{3x} = 8^{x+1}$

8. $4^x + 5 = 21$

9. $3^{x-14} = \left(\frac{1}{3}\right)^{2x-1}$

$$10. 81^{x+3} = \left(\frac{1}{3}\right)^{5x-6}$$

$$11. \left(\frac{1}{3}\right)^x - 9 = 18$$

$$12. 4^x = \left(\frac{1}{2}\right)^{x-3}$$

Solve each inequality:

$$13. 4^{3x} < 2^{x+10}$$

$$14. 3^x \leq 27^{x-4}$$

$$15. 2^{7x-6} > 2^{5x+2}$$

17. There are 8 bacteria in a culture. The number of bacteria in the culture quadruples every hour. After how many hours will there be 2,048 bacteria?
