6-6 Additional Practice

Exponential and Logarithmic Equations

Find all solutions of the equation. Round answers to the nearest thousandth, if necessary.

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

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

3. $0.0001 = 10^{2x}$

4. $14^{x+7} = 196^{x+2}$

5. $36x^2 = 216^{x+3}$

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

7. $15 = 4x$

8. $4 + 3^{x-5} = 15$

9. $e^{x+1} = 5$

10. $4^{x-3} - 3 = 6$

11. $3^{x-2} = 4$

12. $5^{x+3} = 4$

Find all solutions of the equation.

13. $\log_3 (2x) = \log_3 18$

14. $\log_5 (x^2 - x) = \log_5 (2x - 2)$

15. $\log_2 (2x) = \log_2 (x + 3)$

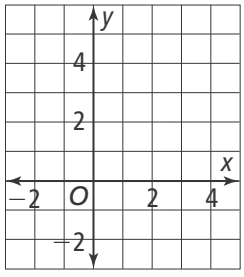
16. $\ln(x^2 - 4x) = \ln(-4x + 25)$

17. $\ln(2x + 3) = \ln(-2x + 7)$

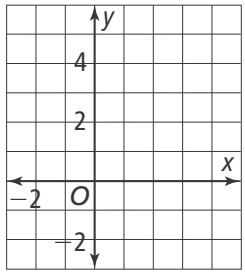
18. $\log_4 (x + 1) = \log_4 (3x - 5)$

Solve the equations below using a graphing calculator to find the point(s) of intersection. Round answers to the nearest thousandth.

19. $\log (3x - 4)^2 = x + \log x$



20. $\ln(5x) = x^2$



21. A bee farm has 700 bees on September 1st. Winter is coming and the number of bees decreases by 35% every 2 months from September 1st until March 1st. How many bees are on the farm on March 1st?