

Name: \_\_\_\_\_

Date: \_\_\_\_\_

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**Solve the following exponential functions [be sure to check your answers!]:**

1.  $e^x = 45$

2.  $5^x - 21 = 14$

3.  $81^{x+1} = 3^{5x+6}$

4.  $3e^{2x} - 4 = 44$

5.  $3(4^{x-4}) - 8 = 106$

6.  $\left(\frac{1}{27}\right)^{x+1} = 3^{6x+6}$

7.  $e^{2x} - 7e^x + 12 = 0$

8.  $2 \cdot 3^{2x} - 5 = 117$

9.  $-4e^x + 21 = -39$

10.  $4^{3x+9} = \left(\frac{1}{64}\right)^x$ 

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$$11. \log_2(4x) = 5$$

$$12. \log_6(5x + 11) + 5 = 8$$

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$$13. \log_5(3x - 7) = \log_5(7x - 21)$$

$$14. \log_3(x) + \log_3(x - 6) = 3$$

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$$15. \log_4(192) - \log_4(3x) = 2$$

$$16. \log_3(x^2 + 3x) = \log_3(x + 15)$$

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$$17. \log_2(4x) - \log_2(x - 2) = 3$$

$$18. \log_4(x - 15) - \log_4(x) = 2$$

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$$19. \log_2(2x) + \log_2(x - 2) = 4$$

$$20. \log_3(x) + \log_3(x - 1) = \log_3(3x + 12)$$

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