

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

## Solving Exponential & Logarithmic Functions

**Exercise 1:** Use the one-to-one property to solve the equation for  $x$ .

1)  $3^{x+1} = 27$

2)  $2^{x-1} = 16$

3)  $2^{x-2} = \frac{1}{32}$

4)  $\left(\frac{1}{5}\right)^{x+1} = 125$

5)  $e^{3x+2} = e^3$

6)  $e^{2x-1} = e^4$

7)  $e^{x^2-3} = e^{2x}$

8)  $e^{x^2+6} = e^{5x}$

**Exercise 2:** Solve.

1)  $3(4^{t-2}) - 4 = 1$

2)  $5(2^{3-x}) + 2 = 10$

3)  $(4^{x+3}) - 4 = 20$

4)  $6(5^{2t-4}) - 50 = 100$

5)  $3(e^{t-4}) = 7$

6)  $e^{x-5} + 3 = 12$

7)  $9(5^{3-4x}) + 7 = 25$

8)  $e^{5-x} + 3 = 7$

9)  $3(e^{x-5}) + 4 = 4$

10)  $3(e^{2x-7}) + 6 = 7$

11)  $7(e^t) + 7 = 11$

12)  $2\ln x - \ln 9 = 0$

13)  $2\ln x = \ln 25$

14)  $2\ln x - 2\ln 11 = 0$

15)  $2\ln x - 4\ln 6 = 0$

16)  $\log_3 x = \log_3 (3x + 2)$

17)  $\log_4 5 = \log_4 (x - 13)$

18)  $\log_5 3x = \log_5 (9 - 3x)$

19)  $\log_7 (4x - 1) = \log_7 (x - 5)$

20)  $\log_4 x = \log_4 (x - 9)$

21)  $\log_3 x = \log_3 (3x + 2)$

22)  $\log_3 (9 - 8x) = \log_3 (2x + 5)$

23)  $\log_5 (6 - 5x) = \log_5 (7 + 3x)$

24)  $\log_2 (8 - x) + \log_2 (2 - x) = 0$

25)  $e^{2x} - e^x + 1 = 0$

26)  $e^{2x} - 6^x + 9 = 0$

27)  $\log_2 (x + 5) - \log_2 (x - 2) = 3$