

Name: ..... ID# ..... Sec# .....

**Exponential Equations**

A. Solve for x. Round the final answer to two decimal places.

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

4.  $2^{x+1} = 5$

7.  $20,000 = 1000^{0.08x}$

2.  $2^{x+3} = \frac{1}{8}$

5.  $e^x = 7$

8.  $2^{x+5} = 3^{x-2}$

3.  $9^{2x+1} = 27^{x+2}$

6.  $10^{x-3} = 50$

9.  $e^{2x-4} = 10^{x+2}$

B. Solve for t. Round your answer to two decimal places.

10.  $3 \cdot 2^{2t} = 12$

13.  $\frac{1}{2}e^{2t} = 4e^{2t} - \frac{1}{3}$

16.  $\frac{e^t + 1}{e^t - 1} = 2$

11.  $25 = 75 - e^{0.3t}$

14.  $6 = \frac{45}{1 + 2^t}$

17.  $\frac{20}{2 + 3(2^{0.2t})} = 6$

12.  $100 = 45 + 6 \cdot (2^{\frac{t}{5}})$

15.  $20 = \frac{1000}{5 + e^{2t}}$

**Logarithmic equations**

C. Solve for x:

1.  $\log_2 x = 5$

4.  $\log_3(3x - 1) = -2$

7.  $\log_3(x^2) = 4$

2.  $\log_{15} x = -1$

5.  $\log_{\frac{1}{3}}(x + 4) = 3$

8.  $\log_4 \frac{2x-1}{x+3} = 2$

3.  $\log_7(x - 3) = 1$

6.  $\log_{\frac{2}{3}}(x + 1) = -2$

9.  $\log_x 400 = 2$

(Hint: for C1. through C6, rewrite the equation in exponential form first.)

D. Solve for x:

1.  $\log_2(x + 1) - \log_2(2x + 3) = 3$

4.  $250 = 2 \log(x + 30) + 50$

2.  $\log_3(2x + 1) + \log_3(x - 2) = \log_3(2x^2 - 15)$

5.  $1.6 \ln(x + 2000) - 6.8 = 12.5$

3.  $\ln 2x - \ln(x + 3) = \ln(5)$

6.  $\frac{15}{1 + 3 \log_2(x - 5)} = 3.75$