

Math 5700 HW #8

Rewrite these expressions using log properties.

$$\textcircled{1} \log\left(\frac{p^2 q^3}{r}\right)$$

$$\textcircled{2} 5 \ln|x-2| - \ln|x+2| - 3 \ln|x|$$

$$\textcircled{3} 4[\ln x + \ln(x+5)] - 2 \ln(x-5)$$

Solve these eqns.

$$\textcircled{4} \log(5x) + \log(x-1) = 2$$

$$\textcircled{5} 14e^{3x+2} = 560$$

$$\textcircled{6} e^{2x} - 6e^x + 8 = 0$$

$$\textcircled{7} 4 \ln(3x) = 15$$

$$\textcircled{8} \log_{10}(x-1) = \log_{10}(x-2) - \log_{10}(x+2)$$

$$\textcircled{9} \log_{10}(x+2) - \log_{10} x = \log_{10}(x+5)$$

Prove these statements are false.

$$\textcircled{10} \ln(x+y) = \ln x + \ln y$$

$$\textcircled{11} \ln(x+y) = \ln(x \cdot y)$$

⑫ You are depositing \$1000 in a savings account. Which of the following will produce the largest balance?

- (a) 6% annual interest rate, compounded annually
- (b) 5.85% annual interest rate, compounded continuously
- (c) 5.99% annual interest rate, compounded quarterly.

⑬ The half-life of radioactive actinium is 22 years. What percent of a present amount of radioactive actinium will remain after 19 yrs?