QUIZ 10 - MATH 111 Friday, November 19

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Read each problem **very carefully** before starting to solve it. Each problem is worth around 5 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. [4 points]

   (a) Use properties of logarithms to break (as much as possible).
   $\log_2\left(\frac{x^3\sqrt{y}}{z^5}\right) =$

   (b) Use properties of log to combine into a single logarithm.
   $3\ln(x+7) - \frac{1}{2}\ln x + 5\ln(x-1) =$

2. [4 points] Solve the exponential equation $147 \cdot 7^{8x+3} + 5 = 8$.

3. [4 points] Solve the logarithmic equation

$$\log_{12}(2x+6) + \log_{12}(x+2) = 2.$$

(**Hint:** Don't forget to check your solutions!)