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

1. Calculate the following logarithms:

   (a) $\log_5 125 =$

   (b) $\log_2 \frac{1}{16} =$

   (c) $\log_9 \frac{1}{27} =$.

2. (a) Break as a sum/difference of multiples of logarithms: $\ln\left(\frac{(x-1)\sqrt{y}}{x^3}\right)$.

   (b) Write as a single logarithm $\frac{1}{3}\log(x+2) - 2\log(x+5)$.

3. Solve the following equations:

(a) $3^{x+7} = 8$.

(b) $\log 12 = \log x + \log (7 - x)$.