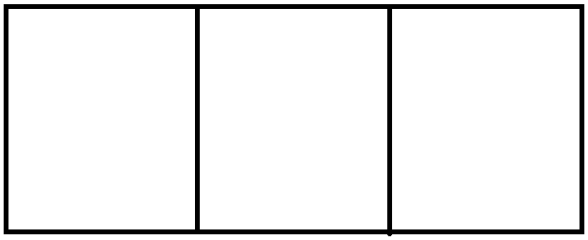
EXAM 3 - MATH 112 Friday, November 11

YOUR NAME:_____ George Voutsadakis

Read each problem **very carefully** before starting to solve it. Each problem is worth 10 points. It is necessary to show **all** your work. Correct answers without explanations are worth 0 points. GOOD LUCK!!

1. A farmer has 1200ft of fencing and wishes to build three identical rectangular enclosures as in the diagram. What should the dimensions of each enclosure be to maximize the total enclosed area?



2. Evaluate the derivative $\frac{dy}{dx}$ if $x^2y + y^2x = 0$, at the point $(x, y) = (-2, 2)$.

3. Solve the logarithmic equation

$$\log_7 (x-3) + \log_7 (x+4) = 2 \log_7 x.$$

4. Compute the derivative of

$$f(x) = e^{3x} \ln (x^2).$$

5. Find an equation of the tangent line to the function $f(x) = \dfrac{e^{2x}}{x+1}$ at $x = 1$.