Math 1A: Discussion 10/26/2018

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Question 1

What are the global maximum and minimum values of $f(x) = x^3 - 3x + 2$ on the interval $[-3, 2]$?

Question 2

What is the maximum area of a rectangle that has perimeter equal to 16?

Question 3

What is the smallest distance from a point on the hyperbola $xy = 1$ to the origin? Find all points on the hyperbola that are closest to the origin.

Question 4

(Midterm Fall 2001) What is the maximum possible area of a rectangle in the first quadrant having one vertex at the origin and the opposite vertex on the ellipse $4x^2 + 9y^2 = 1$?

Question 5

What is the maximum possible area of a rectangle in the first quadrant with one vertex at the origin and the opposite vertex at a point of the graph $y = 4\sqrt{x}e^{-x}$ with $x \geq 0$?