

Quiz 4, Calculus III – Calculators okay

Dr. Graham-Squire, Fall 2013

Name: _____

1. (4 points) Use any method you want to solve the optimization problem (you can use methods from sections 13.8/13.9 or Lagrange multipliers). The product of three numbers x , y and z is $\frac{32}{3}$. Find values for x , y and z such that the sum $x + 2y + 3z$ is a minimum.

2. (3 points) Evaluate the iterated integral $\int_1^4 \int_1^{\sqrt{x}} 2ye^{-x} dydx$. Show your work and leave your answer in exact form.

3. (3 points) Consider the iterated integral $\int_0^2 \int_0^{\sqrt{4-x^2}} \sin \sqrt{x^2 + y^2} dydx$.

(a) Sketch the region of integration.

(b) Can you easily calculate the integral by hand as it is given? If so, explain why it is easy. If not, explain why it is hard.

(c) Would changing the order of integration or changing to polar coordinates help? If so, explain why.