Calc 3 Review Problems

Biller

1) What is an integral that represents the area between the plane $z = 0$, the plane $x = z$, and the plane $y^2 = 4$
1(b): Evaluate the integral:

Blaski

1. Integrate the following function:

$$\int_0^{\pi} \int_{\frac{-2}{\pi}}^{\frac{2}{\pi}} \sin x \cos y \; dx \; dy$$

2. Find the directional derivative of the function

$$f(x, y, z) = 2x^2 - y^2 + z^2$$

at the point (1,2,3) from (1,2,3) to (3,5,0).

Fuentes

Evaluate the integral

$$\int_{x=0}^{x=6} \int_{y=x/3}^{y=2} 2x\sqrt{y^3 + 1} dy \; dx.$$

Find the maximum and minimum values of $f(x, y) = x + y$ on the circle $x^2 + y^2 = 8$ using the method of Lagrange multipliers.

Juarez

(1)

$$\int_0^5 \int_1^{x^3} 9x^3y^2 \; dy \; dx$$

(2) Let the region R be bounded by curves $x = 0$; $y = 0$; and $x + y = 2$ Evaluate the following integral

$$\int \int_R \cos \frac{x - y}{x + y} \; dx \; dy$$

Piazza

1. Problem 1: $\int_1^2 \int_0^{x^2} 5x^3 2y dy dx =$

2. Problem 2: Find the derivative of $\int_0^4 \int_{\sqrt{x}}^2 \cos(y^2) dy dx =$.

Salazar

1. Write down a double integral that represents the area bounded by the curves $y = \sin x$ and $y = x^2$ in the first quadrant. Evaluate the double integral.

2. Evaluate the following integral: $\int_0^2 \int_x^2 x^2 y^2 \, dy \, dx$.

Smith

1. Evaluate the double integral

$$\int \int_R xy \, dA$$

where R is the first quadrant part of the disk with center (0,0) and radius 1.

2. Plot the point whose polar coordinates are:

$$(-1, \frac{\pi}{3}).$$

Then find the Cartesian coordinates of this point.

Youn

1. Find and analyze the critical points of $f(x, y) = x^2 - 2x + y^2 - 4y + 5$
2. $f(x, y) - cos(2x + y) + 3sin(x + y)$

Compute linear and quadratic Taylor approximation f near (0,0)