Math 2211: Recitation 9 (T)

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(1) Solve any **two** the following problems:

(a) Let $R = \{(x, y)| -1 \leq x \leq 1,\ -2 \leq y \leq 2\}$, evaluate the integral

$$\iint_R \sqrt{1 - x^2} dA.$$

(b) Evaluate

$$\int_0^1 \int_0^1 xy\sqrt{x^2 + y^2} dy dx.$$

(c) Let $R = [0, 1] \times [0, 2]$. Evaluate

$$\iint_R xy\, e^{x^2 y} dA.$$

(2) Solve the following problems. **(Do any two of them)**.

(a) Find the extreme values of f on the region described by the inequality given as

$$f(x, y) = e^{-xy}, \quad x^2 + 4y^2 \leq 1.$$

(b) Evaluate

$$\iint_R \frac{x}{1+xy}\,dA, \quad R = [0,1] \times [0,1]$$

(c) Evaluate

$$\int_0^{\frac{\pi}{2}} \int_0^{\cos\theta} e^{\sin\theta} d\theta dr.$$

(Bonus) Solve the following integrals. **(Do any one of them)**.

(a) Find the volume of the solid that lies under the paraboloid $z = x^2 + y^2$ and above the region D in the xy-plane bounded by the line $y = 2x$ and the parabola $y = x^2$.

(b) Evaluate $\iint_R (3x + 4y^2) dA$, where R is the region in the upper half plane bounded by the circles $x^2 + y^2 = 1$ and $x^2 + y^2 = 4$.
Hint: Change to polar coordinates.