NAME: (print!) _____   **Section:** _____

E-MAIL SCANNED .pdf OF COMPLETED QUIZ to DrZcalc3@gmail.com (Attachment: q12FirstLast.pdf) ASAP BUT NO LATER THAN Oct. 19 8:00pm

1. Calculate the iterated integral

$$\int_1^2 \int_{-1}^1 (x + y^2)\, dx\, dy \quad .$$

$$\int_{-1}^2 (x + y^2)\, dx$$

$$= \frac{x^2}{2} + y^2 \Big|_{-1}^1$$

$$= \frac{1}{2} + y^2 - \frac{1}{2} + y^2$$

$$= 2y^2$$

$$\int_1^2 2y^2\, dy$$

$$= \frac{2}{3} y^3 \Big|_1^2$$

$$= \frac{16}{3} - \frac{2}{3}$$

$$\boxed{= \frac{14}{3}}$$

2. Calculate the double integral

$$\int\int_R \frac{x^2 y}{x^3 + 1}\, dA \quad ,$$

$$R = \{(x, y) \,|\, 0 \le x \le 1\,,\, -1 \le y \le 1\} \quad .$$

$$\int \frac{x^2 y}{x^3 + 1}\, dA$$

$$= y \frac{1}{3} \ln|1 + x^3| \Big|_0^1$$

$$= \frac{1}{3} y \ln|2|$$

$$\int \frac{1}{3} y \ln|2|$$

$$= \frac{1}{6} \ln|2| y^2 \Big|_{-1}^1$$

$$= \frac{\ln 2}{6} - \frac{\ln 2}{6}$$

$$\boxed{= 0}$$