**NAME:** (print!) __Krithika  Parrachari__                    **Section:** __22__

**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

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

$$\underbrace{\tfrac{1}{2}x^2 + xy^2 \Big|_{-1}^{1}}$$

$$= \left(\tfrac{1}{2}(1)^2 + (1)y^2\right) - \left(\tfrac{1}{2}(-1)^2 + (-1)y^2\right)$$

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

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

$$= \tfrac{2}{3}y^3 \Big|_1^2 = \tfrac{2}{3}(2)^3 - \tfrac{2}{3}(1)^2 = \tfrac{16}{3} - \tfrac{2}{3} = \boxed{\tfrac{14}{3}}$$

**2.** Calculate the double integral

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

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

$$\int_{-1}^1 \int_0^1 \frac{x^2 y}{x^3 + 1} \, dx\, dy$$

$$\underbrace{\tfrac{1}{3}x^3 y \cdot \ln(x^3 + 1) \Big|_0^1}$$

$$\tfrac{1}{3}y - \ln(2)$$

$$\int_{-1}^1 \tfrac{1}{3}y - \ln(2) = \tfrac{1}{6}y^2 \Big|_{-1}^1 = \tfrac{1}{6} - \tfrac{1}{6} = \boxed{0}$$