

$$\begin{aligned}
 1. \quad & \int_1^2 \int_{-1}^1 (x+y^2) dx dy \\
 & \int_{-1}^1 (x+y^2) dx \\
 & = \left. \frac{x^2}{2} + xy^2 \right|_{-1}^1 \\
 & = \left(\frac{1-1}{2} \right) + (1+1)y^2 \\
 & = 2y^2
 \end{aligned}$$

$$\begin{aligned}
 & \int_1^2 \int_{-1}^1 (x+y^2) dx dy \\
 & = \int_1^2 2y^2 dy \\
 & = \left. \frac{2}{3}y^3 \right|_1^2 \\
 & = \frac{2}{3}(8-1) = \frac{14}{3}
 \end{aligned}$$

$$2. \quad \iint_R \frac{x^2 y}{x^3+1} dA \quad R = \{(x,y) \mid 0 \leq x \leq 1, -1 \leq y \leq 1\}$$

$$\begin{aligned}
 & \int_{-1}^1 \int_0^1 \frac{x^2 y}{x^3+1} dx dy \\
 & = \int_0^1 \frac{x^2 y}{x^3+1} dx \\
 & = \left. \frac{y \ln(x^3+1)}{3} \right|_0^1 \\
 & = \frac{\ln 2 y}{3} \\
 & \int_{-1}^1 \frac{\ln 2 y}{3} dy \\
 & = \left. \frac{\ln 2 y^2}{6} \right|_{-1}^1 \\
 & = 0
 \end{aligned}$$

