

$$(37) 4x + 6y - 2z + 15 = 0$$

$$R = \{ (x, y) \mid x \in [-1, 2] \wedge y \in [-1, 1] \}$$

$$2x + 3y + \frac{15}{2} = z$$

$$V = \int_{-1}^2 \int_{-1}^1 2x + 3y + \frac{15}{2} dy dx = \int_{-1}^2 \left[ 2xy + \frac{3}{2}y^2 + \frac{15}{2}y \right]_{-1}^1 dx =$$

$$= \int_{-1}^2 \left[ 2x + \frac{3}{2} + \frac{15}{2} + 2x - \frac{3}{2} + \frac{15}{2} \right] dx = \int_{-1}^2 4x + 15 dx = \left[ 2x^2 + 15x \right]_{-1}^2$$

$$= 8 + 30 - 2 + 15 = 36 + 15 = \boxed{51}$$

$$(41) z = 1 + x^2 y e^y \quad x = \pm 1 \quad y = 0, 1$$

$$V = \int_{-1}^1 \int_0^1 1 + x^2 y e^y dy dx = \int_{-1}^1 \left( \int_0^1 1 dy + x^2 \int_0^1 y e^y dy \right) dx$$

$$= \int_{-1}^1 1 + x^2 \int_0^1 y e^y dy dx$$

$$\int_{-1}^1 1 + x^2 dx = 2 \int_0^1 1 + x^2 dx$$

$$= 2 \left[ x + \frac{1}{3}x^3 \right]_0^1 = 2 \left[ 1 + \frac{1}{3} \right] = \boxed{\frac{8}{3}}$$

$$\int_0^1 y e^y dy = \left[ y e^y - e^y \right]_0^1 = e^1 - e^0 = e - 1$$

$$y e^y - e^y \Big|_0^1 = e^1 - e^0 = e - 1$$