35) $y = 1 - x^2 \quad y = x^2 - 1$

$x \in [-1, 1]$

$z = 2 - x - y$

$x + y + z = 2$

$y = 2 - x$

$x = 2$

$z = 2$

$z = 2x + 2y + 10$

$2x + 2y - z + 10 = 0$

$y = 5 - x$

$x = -5$

$$D = \{ (x, y) \mid x \in [-1, 1] \land y \in [x^2 - 1, 1 - x^2] \}$$

$$\int_{-1}^{1} \int_{x^2-1}^{1-x^2} 2x + 2y + 10 \, dy\,dx - \int_{-1}^{1} \int_{x^2-1}^{1-x^2} 2 - x - y \, dy\,dx =$$

$$\int_{-1}^{1} \int_{x^2-1}^{1-x^2} 8 + 3x + 3y \, dy\,dx = \int_{-1}^{1} 8(1-x^2) + 3x(1-x^2) + \frac{3}{2}(1-x^2)^2 - 8(x^2-1) - 3x(x^2-1) - \frac{3}{2}(x^2-1)^2 \, dx$$

$$= \int_{-1}^{1} (16 - 16x^2 + 6x - 6x^3) \, dx = 16x - \frac{16}{3}x^3 + 3x^2 - \frac{3x^4}{2} \Big]_{-1}^{1} =$$

$$2\left(16 - \frac{16}{3} + 3 - \frac{3}{2}\right) = 2\left(\frac{32}{3}\right) = \boxed{\frac{64}{3}}$$