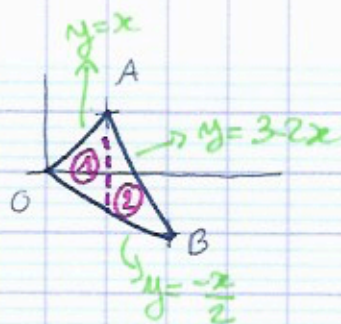


$$\textcircled{1} I = \iint_D (x+2y^2) dx dy$$



$$I_1 = \int_{x=0}^1 \int_{y=-\frac{x}{2}}^x (x+2y^2) dy dx$$

$$= \int_{x=0}^1 \left[ xy + \frac{2y^3}{3} \right]_{y=-\frac{x}{2}}^x dx$$

$$= \int_{x=0}^1 \left\{ \left( x^2 + \frac{2x^3}{3} \right) - \left( -\frac{x^2}{2} - \frac{2x^3}{24} \right) \right\} dx$$

$$= \int_{x=0}^1 \left( \frac{3x^2}{2} + \frac{3x^3}{4} \right) dx$$

$$= \left[ \frac{x^3}{2} + \frac{3x^4}{16} \right]_0^1$$

$$= \frac{1}{2} + \frac{3}{16} = \frac{11}{16}$$

$$I_2 = \int_{x=1}^2 \int_{y=\frac{x}{2}}^{3-2x} (x+2y^2) dy dx$$

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

$$= \int_{x=1}^2 \left\{ \left( x(3-2x) + \frac{2(3-2x)^3}{3} \right) - \left( \frac{x^2}{2} + \frac{2x^3}{12} \right) \right\} dx$$

$$= \int_{x=1}^2 \left\{ \left( 3x - 2x^2 + \frac{2}{3}(27 - 54x + 36x^2 - 8x^3) \right) + \frac{x^2}{2} + \frac{x^3}{12} \right\} dx$$

$$= \int_{x=1}^2 \left( 18 - 33x + 22.5x^2 - \frac{21}{4}x^3 \right) dx$$

$$= \left[ 18x - \frac{33}{2}x^2 + \frac{22.5}{3}x^3 - \frac{21}{16}x^4 \right]_1^2$$

$$= 18 \times 2 - 16.5 \times 4 + 7.5 \times 8 - 21$$

$$- 18 + \frac{33}{2} - 7.5 + \frac{21}{16}$$

$$= \frac{21}{16}$$

$$\text{total } I = \frac{32}{16} = \textcircled{2}$$