

Aula 22 - 16.4/4

Domel Cursum Vilela de Sales - 123.145

$$\cdot \int_C x^2 \cdot y^2 dx + xy dy = \int_{c_1} x^2 \cdot y^2 dx + xy dy + \int_{c_2} x^2 \cdot y^2 dx + xy dy + \int_{c_3} x^2 \cdot y^2 dx + xy dy$$

$$\cdot \int_{c_1} x^2 \cdot y^2 dx + xy dy = \int_0^1 x^2 (x^2)^2 dx + x(x^2) \cdot (2x dx)$$

$$\int_{c_1} x^2 \cdot y^2 dx + xy dy = \int_0^1 (x^6 + 2x^4) dx$$

$$\int_{c_1} x^2 \cdot y^2 dx + xy dy = \left[ \frac{x^7}{7} + \frac{2x^5}{5} \right]_0^1$$

$$\int_{c_1} x^2 \cdot y^2 dx + xy dy = \frac{1}{7} + \frac{2}{5} = \frac{19}{35}$$

$$\cdot \int_{c_2} x^2 \cdot y^2 dx + xy dy = \int_{c_2} x^2 \cdot 1 dx + x \cdot 1 \cdot 0$$

$$\int_{c_2} x^2 \cdot y^2 dx + xy dy = \int_1^0 x^2 dx$$

$$\int_{c_2} x^2 \cdot y^2 dx + xy dy = \left[ \frac{x^3}{3} \right]_1^0$$

$$\int_{c_2} x^2 \cdot y^2 dx + xy dy = -\frac{1}{3}$$

$$\cdot \int_{c_3} x^2 \cdot y^2 dx + xy dy = \int_{c_3} 0 \cdot y^2 \cdot 0 + 0 \cdot y dy = 0$$

$$\therefore \int_C x^2 \cdot y^2 dx + xy dy = \frac{19}{35} - \frac{1}{3} = \frac{22}{105}$$