

$$2. \vec{F}(x, y) = \underbrace{20x^3 y^3}_{M} \vec{i} + \underbrace{15x^4 y^2}_{N} \vec{j}$$

$$\frac{\partial M}{\partial y} = \underline{\underline{60x^3 y^2}} \quad \frac{\partial N}{\partial x} = \underline{\underline{60x^3 y^2}}$$

(YES)

$$3. \int_C \underbrace{y^5}_{M} dx + \underbrace{5xy^4}_{N} dy \quad \frac{\partial M}{\partial y} = 5y^4 \quad \frac{\partial N}{\partial x} = 5y^4$$

$$f_x = y^5 \quad f_y = 5xy^4$$

YES

$$f = \int y^5 dx$$

$$= xy^5$$

$$f = \int 5xy^4 dy$$

$$= 5x \cdot \frac{1}{5} y^5$$

$$= xy^5$$

$$x(t) =$$

$$y(t) =$$

$$f(x, y) = xy^5$$

$$\begin{matrix} x & y \\ (3, & 2) \end{matrix}$$

$$\begin{matrix} x & y \\ (0, & 0) \end{matrix}$$

$$f(3, 2)$$

-

$$f(0, 0)$$

$$3(2^5)$$

-

$$0(0^5)$$

$$= 3(32)$$

$$= \underline{\underline{96}}$$