

$$f(x) = x^2 - 3x + 2$$

$$f'(x) = 2x - 3$$

$$1. \int (2x^3 - \frac{1}{x^2}) dx = \frac{1}{2}x^4 + \frac{1}{x} + C$$

$$\frac{d}{dx} \left(\frac{1}{2}x^4 + \frac{1}{x} + C \right)$$

$$= \frac{d}{dx} \left(\frac{1}{2}x^4 + x^{-1} + C \right)$$

$$= \frac{1}{2} \cdot 4x^3 - 1x^{-2}$$

$$= 2x^3 - \frac{1}{x^2} \quad \checkmark$$

$$3. \int \left(\frac{1}{3x^4} \right) dx$$

$$= \int \left(\frac{1}{3} - \frac{1}{x^4} \right) dx$$

$$= \frac{1}{3} \int x^{-4} dx$$

$$= \frac{1}{3} \cdot \frac{x^{-4+1}}{-4+1} + C$$

$$= \frac{1}{3} \cdot \frac{x^{-3}}{-3} + C$$

$$= \frac{x^{-3}}{-9} + C$$

$$= \frac{1}{-9x^3} + C$$

PROPERTIES

$$1. \int x^n dx = \frac{x^{n+1}}{n+1} + C$$

$$2. \int K dx = Kx + C$$

$$2. \frac{dy}{dx} = 5x^{-2}$$

$$y = \int \frac{dy}{dx}$$

$$y = \int 5x^{-2} dx$$

$$y = 5 \int x^{-2} dx$$

$$y = 5 \cdot \frac{x^{-2+1}}{-2+1} + C$$

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

$$y = 5 \cdot \frac{1}{-1x} + C$$

$$y = \frac{-5}{x} + C$$