

Examples:

$$1) \int (x^2 + 3x - 5) dx = \frac{x^3}{3} + \frac{3x^2}{2} - \frac{5x^1}{1} + C$$
$$= \frac{x^3}{3} + \frac{3x^2}{2} - 5x + C$$

$$2) \int \frac{x^3 - 4x}{x^2} dx = \int \left(x - \frac{4}{x} \right) dx = \int \left(x - 4 \cdot \frac{1}{x} \right) dx$$
$$= \frac{x^2}{2} - 4 \cdot \ln|x| + C$$

$$3) \int \frac{\sqrt{x} - x}{4x^3} dx = \frac{1}{4} \int \frac{x^{1/2} - x}{x^3} = \frac{1}{4} \int x^{-5/2} - x^{-2} dx$$
$$= \frac{1}{4} \left(\frac{x^{-3/2}}{-3/2} - \frac{x^{-1}}{-1} \right) + C$$
$$= \frac{1}{4} \left(\frac{2x^{-3/2}}{-3} + x^{-1} \right) + C$$

$$4) \int (2s+3)^2 ds = \int (4s^2 + 12s + 9) ds$$
$$= \frac{4s^3}{3} + \frac{12s^2}{2} + \frac{9s^1}{1} + C$$
$$= \frac{4s^3}{3} + 6s^2 + 9s + C$$