$$\frac{d}{dx}\left[\frac{x^{n+1}}{n+1} + C\right] = \frac{(n+1)}{n+1}x^n + 0 = x^n$$

$n \neq -1$

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

indef. integral

$n \neq -1$

$$\int x^5 \, dx = \frac{x^{5+1}}{5+1} + C$$

$$= \frac{x^6}{6} + C$$

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

$$= 5\left(\frac{x^{-2+1}}{-2+1} + C_1\right)$$

$$= 5\left(\frac{x^{-1}}{-1} + C_1\right)$$

$$= 5\left(-x^{-1} + C_1\right)$$

$$= \boxed{-5x^{-1} + C}$$