

Rumus integral dasar:

- $\int x^n dx = \int \frac{x^{n+1}}{n+1} + C$
- $\int \frac{1}{x} dx = \ln|x| + C$
- $\int e^x dx = e^x + C$
- $\int a^x dx = \frac{a^x}{\ln a} + C$, dengan a adalah konstanta
- $\int \cos x dx = \sin x + C$
- $\int \sin x dx = -\cos x + C$
- $\int k f(x) dx = k \int f(x) dx$, dengan k adalah konstanta
- $\int (f(x) \pm g(x)) dx = \int f(x) dx \pm \int g(x) dx$

Contoh soal:

1. $\int (2x+2)e^{x^2+2x+3} dx = ?$

misalkan $u = x^2+2x+3$

$$\frac{du}{dx} = 2x+2$$

$$du = (2x+2) dx$$

$$\begin{aligned} \int (2x+2)e^{x^2+2x+3} dx &= \int e^{x^2+2x+3}(2x+2) dx \\ &= \int e^u du \\ &= e^u + C \\ &= e^{x^2+2x+3} + C \end{aligned}$$

2. $\int \frac{x^2+1}{x^3+3x} dx = ?$

misalkan $u = x^3+3x$

$$du = (3x^2+3) dx = 3(x^2+1) dx$$

$$\frac{1}{3} du = (x^2+1) dx$$

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

$$= \int \frac{1}{u} \left(\frac{1}{3}\right) du$$

$$= \frac{1}{3} \int \frac{1}{u} du$$

$$= \frac{1}{3} \ln|u| + C$$

$$= \frac{1}{3} \ln|x^3 + 3x| + C$$