Integral Tentu

Prasyarat Mata Kuliah

Integral

Ingat : Jika F(x) adalah sebuah fungsi dengan F'(x)=f(x) ,

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

Integral tentu fungsi linier

Contoh :

tentukan $\displaystyle\int_0^2 (2x^2 + 5x - 7)\,dx$

$$\frac{2}{3}x^3 + \frac{5}{2}x^2 - 7x\Big]_0^2 = \left(\frac{2}{3}(2)^3 + \frac{5}{2}(2)^2 - 7(2)\right) -$$

$$\left(\frac{2}{3}(0)^3 + \frac{5}{2}(0)^2 - 7(0)\right)$$

$$= \ldots ?$$

Integral fungsi Trigonometri

Ingat !

$$\int \sin x \, dx = -\cos x + C$$

$$\int \cos x \, dx = \sin x + C$$

$$\int \sin a x \, dx = -\frac{1}{a} \cos ax + C$$

$$\int \cos ax \, dx = \frac{1}{a} \sin ax + C$$

Integral tentu fungsi trigonometri

Contoh :

$$\int_0^{\pi} \left(\sin 2x + \cos 4x \right) dx$$

$$= \int_0^{\pi} \sin 2x \, dx + \int_0^{\pi} \cos 4x \, dx$$

$$= -\frac{1}{2} \cos 2x + \frac{1}{4} \sin 4x \Big]_0^{\pi}$$

$$= \left(-\frac{1}{2} \cos 2\pi + \frac{1}{4} \sin 4\pi \right) - \left(-\frac{1}{2} \cos 0 + \frac{1}{4} \sin 0 \right)$$

$$= \left(-\frac{1}{2} (1) + \frac{1}{4} \sin (0) \right) - \left(-\frac{1}{2} (1) + \frac{1}{4} (0) \right) = 0$$

Tugas !

Cari informasi tentang fungsi trigonometri Sinus dan Cosinus

① Grafik fungsi sinus

② Grafik fungsi cosinus

③ Periode

④ Nilai fungsi sinus dan cosinus