

Integral Tertentu

Sifat * Integral Tentu

* Bila $a < b$, maka

$$1) \int_a^b f(x) dx = F(b) - F(a)$$

$$2) \int_a^b f(x) dx = - \int_b^a f(x) dx$$

$$3) \int_a^b dx = b - a$$

$$4) \int_a^b k \cdot f(x) dx = k \int_a^b f(x) dx$$

$$5) \int_a^b (f(x) \pm g(x)) dx = \int_a^b f(x) dx \pm \int_a^b g(x) dx$$

* Bila $a = b$, maka :

$$\int_a^a f(x) dx = F(a) - F(a) = 0$$

* Bila $a < b < c$, maka

$$\int_a^c f(x) dx = \int_a^b f(x) dx + \int_b^c f(x) dx$$

Contoh :

$$\begin{aligned} \textcircled{1} \int_{-1}^1 x^2 dx &= \frac{1}{3} x^3 \Big|_{-1}^1 \\ &= \left(\frac{1}{3} (1)^3 \right) - \left(\frac{1}{3} (-1)^3 \right) \\ &= \frac{1}{3} - \left(-\frac{1}{3} \right) \\ &= \frac{1}{3} + \frac{1}{3} \\ &= \underline{\underline{\frac{2}{3}}} \end{aligned}$$

Setiap x
di ganti
dg angka
1 & (-1)

$$\begin{aligned}
& \textcircled{2} \int_{-1}^2 (-6x^2 + 4x - 2) dx \\
& \Leftrightarrow \frac{-6}{3} x^3 + \frac{4}{2} x^2 - 2x \Big|_{-1}^2 \\
& = -2x^3 + 2x^2 - 2x \Big|_{-1}^2 \\
& = \{(-2 \cdot 2^3) + (2 \cdot 2^2) - (2 \cdot 2)\} - \\
& \quad \{(-2 \cdot (-1)^3) + (2(-1)^2) - (2(-1))\} \\
& = \{(-2 \cdot 8) + (2 \cdot 4) - 4\} - \\
& \quad \{(-2 \cdot -1) + (2 \cdot 1) - (-2)\} \\
& = \{-16 + 8 - 4\} - \{2 + 2 + 2\} \\
& = -12 - 6 \\
& = -18
\end{aligned}$$

