

- Sec 13.3 :

30 find the average value of the function

$$f(x) = \frac{1}{2}x^3 + 1 \text{ over } [-2, 0]$$

$$\rightarrow \frac{1}{b-a} \int_a^b f(x) dx$$

$$= \frac{1}{0-(-2)} \int_{-2}^0 \left(\frac{1}{2}x^3 + 1\right) dx$$

$$= \frac{1}{2} \left[\frac{1}{2} \frac{x^4}{4} + x \right]_{-2}^0$$

$$= \frac{1}{2} \left[\frac{x^4}{8} + x \right]_{-2}^0$$

$$= \frac{1}{2} \left[(0) - \left(\frac{16}{8} + (-2) \right) \right]$$

$$= \frac{1}{2} [0 - 0]$$

$$= \underline{\underline{0}}$$