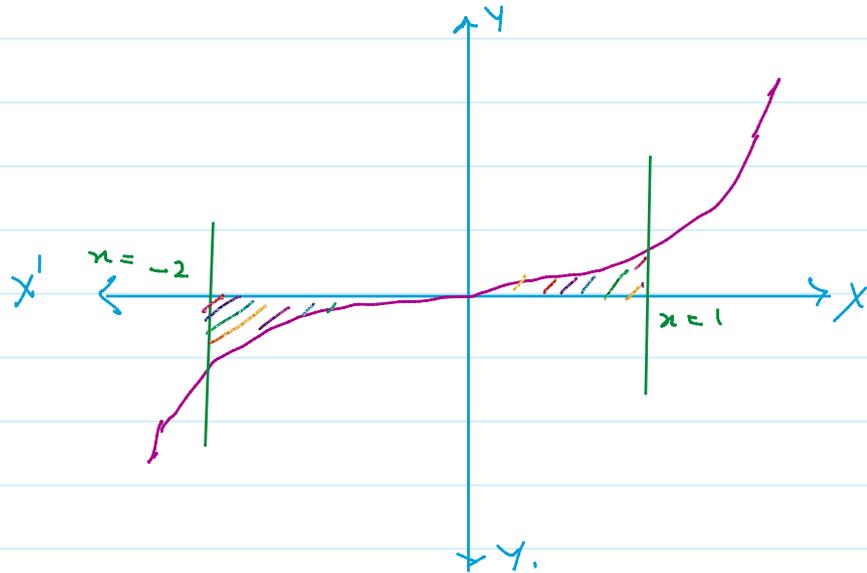Calculate the area bounded by the curve $y = x^3$, the x-axis, & the ordinates $x = -2$ and $x = 1$.

Solution:-

$$y = x^3$$

$$A = \int_{-2}^{1} y \, dx$$

$$\therefore A = \int_{-2}^{1} x^3 \, dx$$

$$\therefore A = \int_{-2}^{0} x^3 \, dx + \int_{0}^{1} x^3 \, dx$$

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

$$\therefore A = \left[0 - \frac{(-2)^4}{4} \right] + \left[\frac{1}{4} - 0 \right]$$

↱ take abs. value

$$\therefore A = -\frac{16}{4} + \frac{1}{4}$$

↓

$$A = 4 + \frac{1}{4} = 17 \quad \text{sq. units} \qquad \text{Ans.}$$

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$$- x -$$