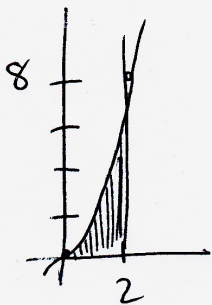


Name: _____

Find \bar{x} for the region bounded by $y = 0$, $y = x^3$ and $x = 2$.



$$\begin{aligned} 1) \quad A &= \int_0^2 x^3 dx \\ &= \left[\frac{x^4}{4} \right]_0^2 \\ &= 4 \end{aligned}$$

①

2) $x_c = x$ for a vertical slice

$$\begin{aligned} 3) \quad &\int x_c dA \\ &= \int_0^2 x \cdot x^3 dx \\ &= \int_0^2 x^4 dx \\ &= \left[\frac{x^5}{5} \right]_0^2 \\ &= \frac{32}{5} \end{aligned}$$

①

①

$$4) \quad \bar{x} = \frac{1}{A} \int x_c dA = \frac{1}{4} \cdot \frac{32}{5} = \frac{8}{5}$$

①