

Compute the area of the region bounded by the curves $y=x^3$ and $y=3x-2$.

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$$x^3 = 3x - 2$$

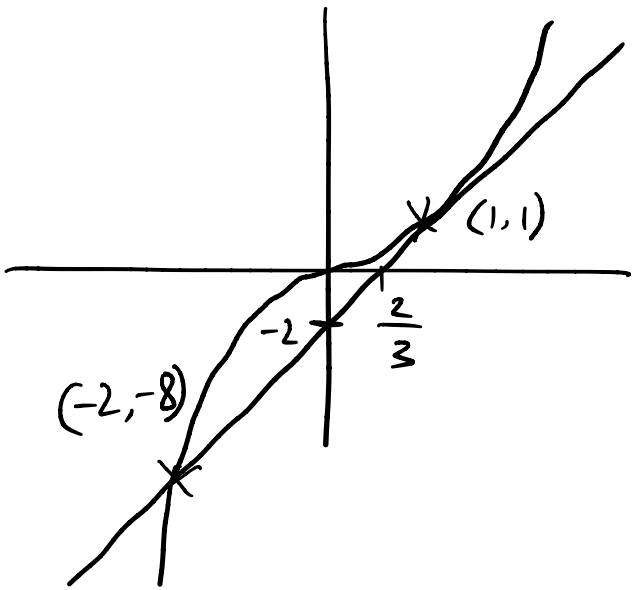
$$\Rightarrow x^3 - 3x + 2 = 0$$

$$(x-1)(x-1)(x+2) = 0$$

Points of intersection: $x = -2, 1$

$$3x - 2 = 0$$

$$x = \frac{2}{3}$$



$$\text{Area} = \int_{-2}^1 x^3 - (3x - 2) dx$$

$$= \left. \frac{x^4}{4} - \frac{3x^2}{2} + 2x \right|_{-2}^1$$

$$= \left(\frac{1}{4} - \frac{6}{4} + \frac{8}{4} \right) - \left(\frac{16}{4} - \frac{24}{4} - \frac{16}{4} \right)$$

$$= \frac{3}{4} + \frac{24}{4}$$

$$= 6\frac{3}{4}$$