

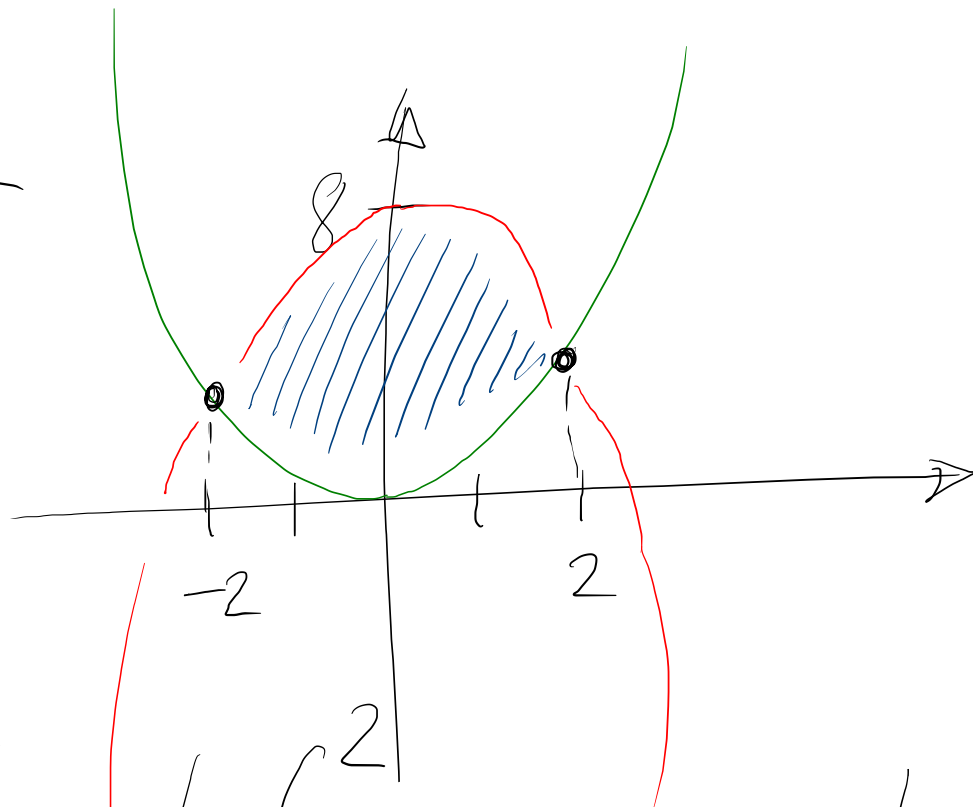
$$f(x) = x^2$$

$$g(x) = 8 - x^2 = (2\sqrt{2} - x)(2\sqrt{2} + x)$$

$$f(x) = g(x) \Leftrightarrow x^2 = 8 - x^2$$

$$\Leftrightarrow 2x^2 = 8 \Leftrightarrow x^2 = 4$$

$$\Leftrightarrow x = \pm 2$$



$$A = \left| \int_{-2}^2 (f(x) - g(x)) dx \right| = \left| \int_{-2}^2 (x^2 - (8 - x^2)) dx \right|$$

$$\begin{aligned} \int_{-2}^2 (x^2 - (8 - x^2)) dx &= \int_{-2}^2 (x^2 - 8 + x^2) dx \\ &= \int_{-2}^2 (2x^2 - 8) dx = \left. \frac{2}{3} x^3 - 8x \right|_{-2}^2 = \frac{32}{3} - 32 = \frac{-64}{3} \\ &= \left(\frac{2}{3} \cdot 8 - 16 \right) - \left(\frac{2}{3} \cdot (-2)^3 - 8 \cdot (-2) \right) = \frac{16}{3} - 16 - \left(-\frac{16}{3} + 16 \right) \end{aligned}$$

$$\Rightarrow A = \frac{-64}{3} = \frac{64}{3}$$