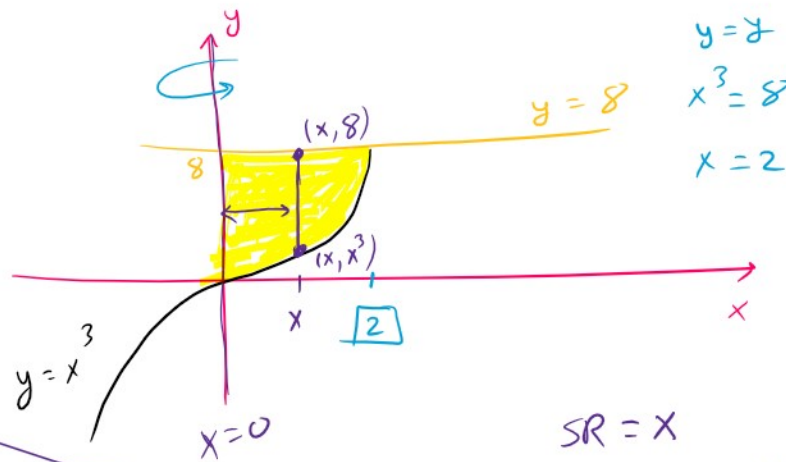


Q24 Use SM

(a) \curvearrowright
y-axis
 \Downarrow



البعد عن المحور الدوران
SR: shell radius
SH: shell height
في كل نقطة

(b) \curvearrowright

$$V = 2\pi \int (SR)(SH) dx = 2\pi \int_0^2 (x)(8-x^3) dx = \dots = \frac{96\pi}{5}$$

(a) \Downarrow

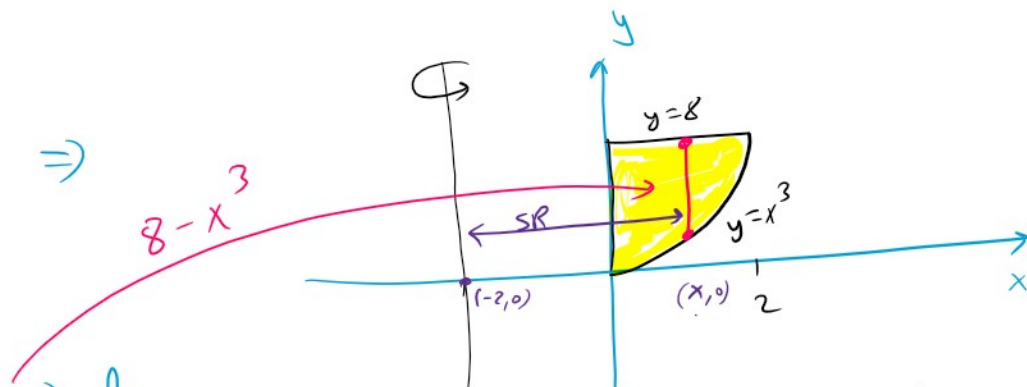
(b) \curvearrowright $x=3$ y-axis

$$V = 2\pi \int (SR)(SH) dx = 2\pi \int_0^2 (3-x)(8-x^3) dx = \dots = \frac{264}{5}\pi$$

Graph showing the region between $y=8$ and $y=x^3$ from $x=0$ to $x=3$. The region is shaded yellow. A vertical shell is shown at position x with radius $SR=3-x$ and height $SH=8-x^3$. The y-axis is the axis of rotation.

(c) \curvearrowright $x=-2$ y-axis \Rightarrow

(b)



$$V = 2\pi \int_{(a)}^{(b)} (SR)(SH) dx$$

$$= 2\pi \int_0^2 (x+2)(8-x^3) dx$$

$$= \dots = \frac{336}{5}\pi$$

$x = -2$

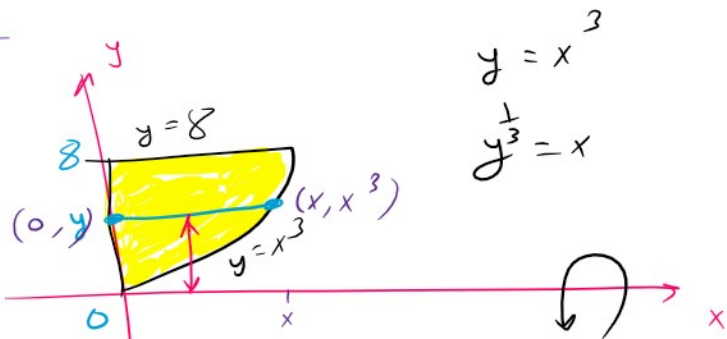
$$SR = \Delta x = x_2 - x_1 = x - (-2) = x + 2$$

(d)

$$V = 2\pi \int_{(c)}^{(d)} (SR)(SL) dy$$

$$= 2\pi \int_0^8 (y)(y^{\frac{1}{3}}) dy$$

$$= \dots = \frac{768}{7}\pi$$

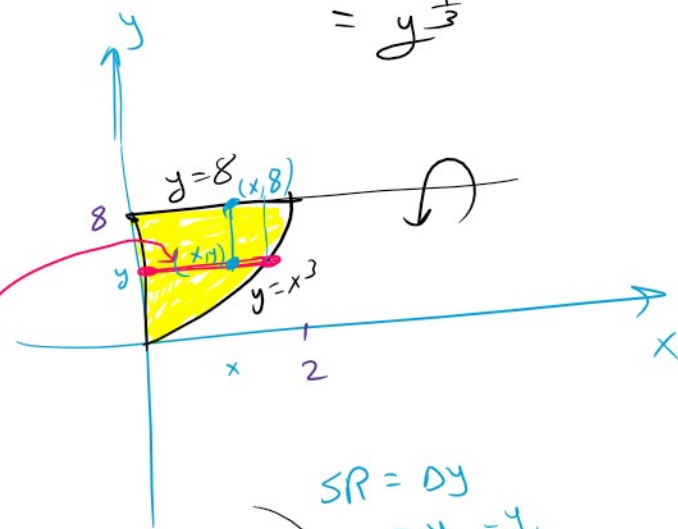


$$SL = \Delta x = x_2 - x_1 = x - 0 = x = y^{\frac{1}{3}}$$

(e) $y=8$ // x -axis

$$V = 2\pi \int_{(c)}^{(d)} (SR)(SL) dy$$

$$= 2\pi \int_0^8 (8-y)(y^{\frac{1}{3}}) dy = \dots = \frac{576}{7}\pi$$

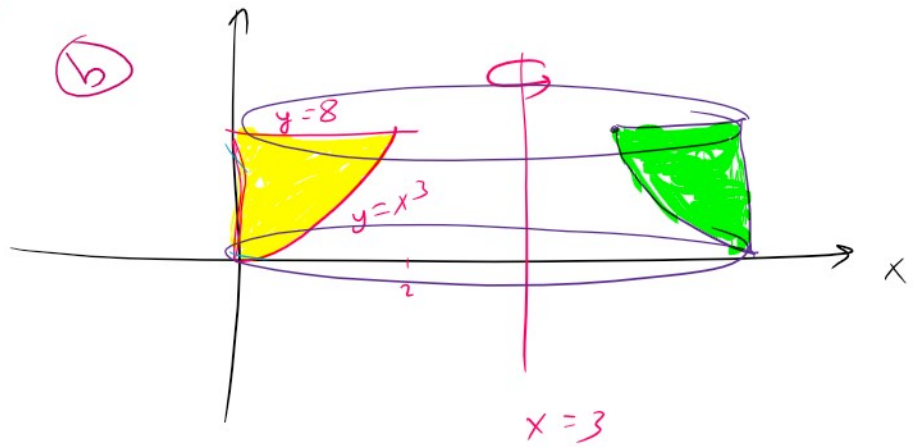


$$SR = \Delta y = y_2 - y_1 = 8 - y$$

$$V = 2\pi \int_0^2 (3-x)(8-x^3) dx$$

$$V = 2\pi \int_0^3 (3-x)(8-x^3) dx$$

(b)



$$V = 2\pi \int_0^8 (y+1) \left(y^{\frac{1}{3}}\right) dy$$

