6.2

Saturday, April 10, 2021 11:17 AM

Q24 Use SM

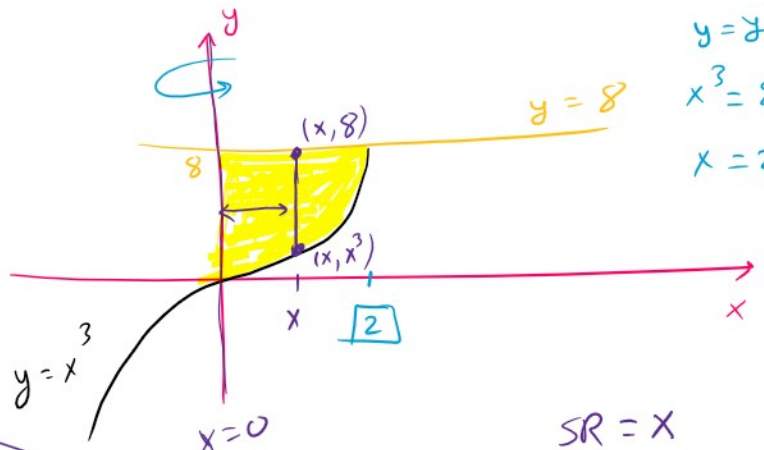
SR: shell radius

SH: shell height

$y = y$

$x^3 = 8$

$x = 2$



(a) y-axis

(b)

$V = 2\pi \int_0^2 (SR)(SH)\, dx$

(a)

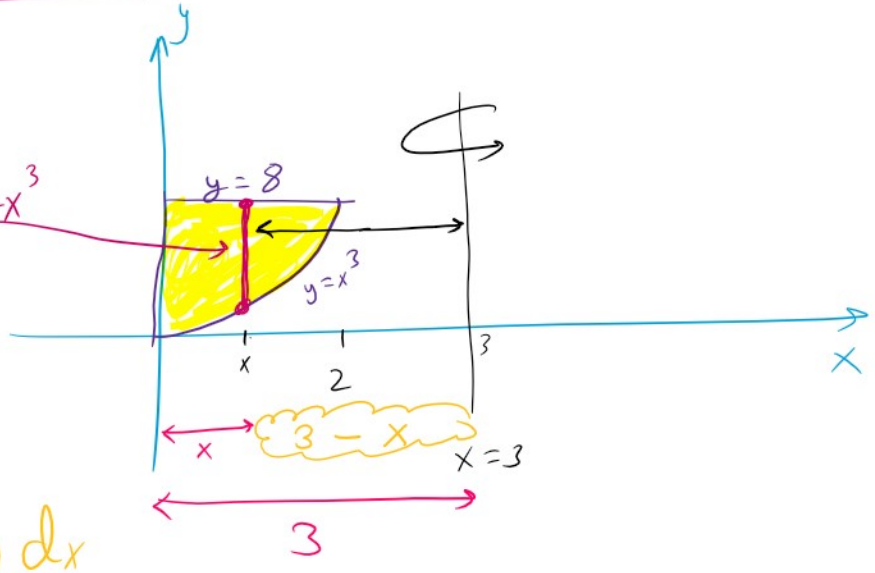
$SR = x$

$SH = \Delta y = y_2 - y_1 = 8 - x^3$

$2\pi \int_0^2 (x)(8 - x^3)\, dx = \cdots = \frac{96\pi}{5}$

(b) $\perp$ // y-axis

$x = 3$



(b)

$V = 2\pi \int_0^2 (SR)(SH)\, dx$

(a)

$SR = 3 - x$

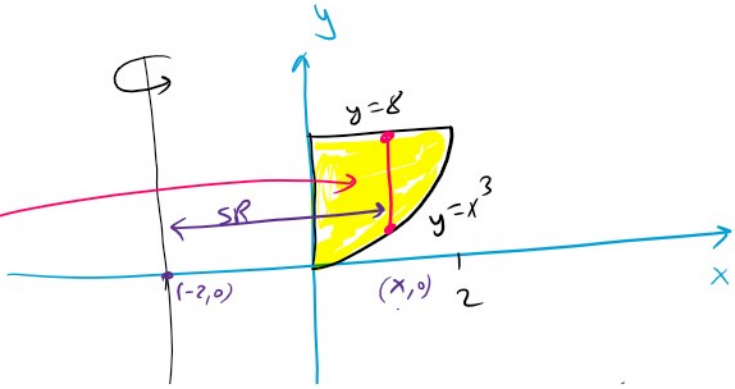
$SH = 8 - x^3$

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

$\cdots = \frac{264}{5}\pi$

(c) $\perp$ // y-axis $\Rightarrow$

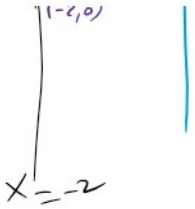
$x = -2$



$SR = 8 - x^3$

(b)

$$V = 2\pi \int_a^b (SR)(SH)\,dx$$

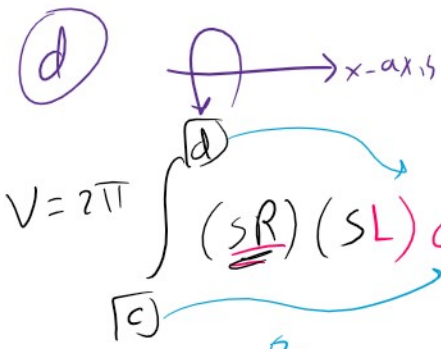


$SR = DX = x_2 - x_1$
$= x - -2$
$= x + 2$

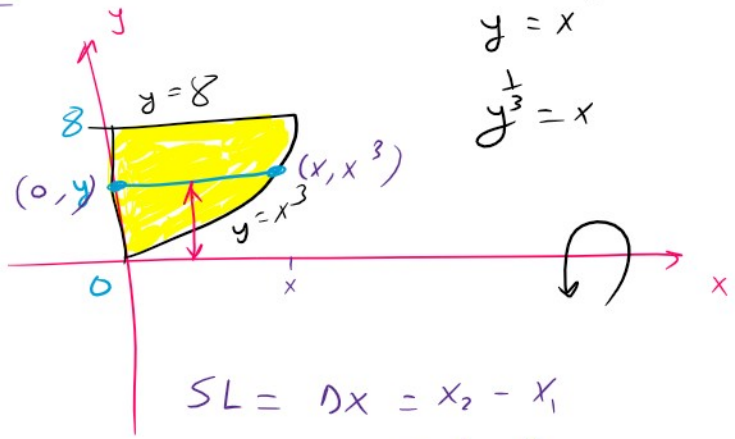
$$= 2\pi \int_0^2 (x+2)(8-x^3)\,dx$$

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

(d)



$$V = 2\pi \int_c^d (SR)(SL)\,dy$$



$y = x^3$

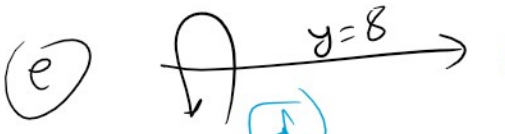
$y^{\frac{1}{3}} = x$

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

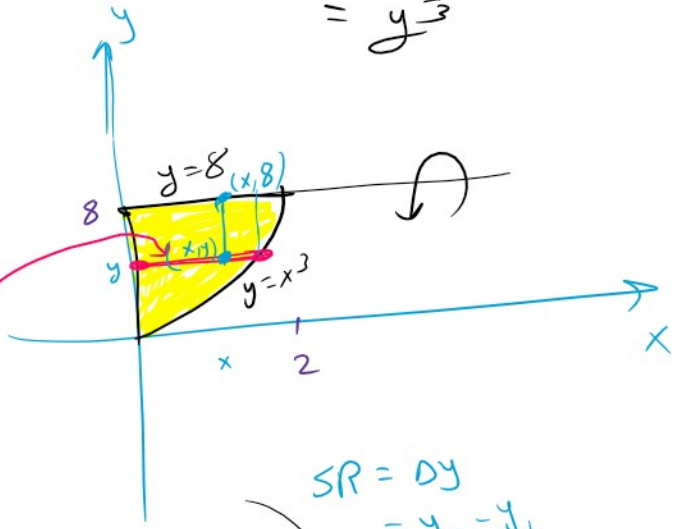
$$= 2\pi \int_0^8 (y)(y^{\frac{1}{3}})\,dy$$

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

(e)



$y^{\frac{1}{3}}$



$$V = 2\pi \int_c^d (SR)(SL)\,dy$$

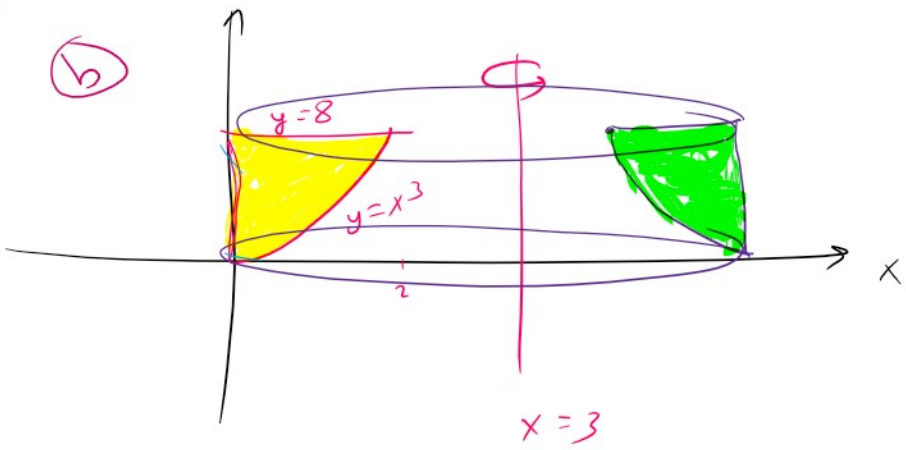
$SR = DY$
$= y_2 - y_1$
$= 8 - y$

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

$$V = 2\pi \int_1^2 (3-x)(8-x^3)\,dx$$

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

(b)



f

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