

16. Find the radius, height, and volume of the solid formed when the rectangle in the figure is rotated about the  $x$ -axis. The vertices of the rectangle are  $(0,0)$ ,  $(7,0)$ ,  $(7,4)$  and  $(0,4)$ .

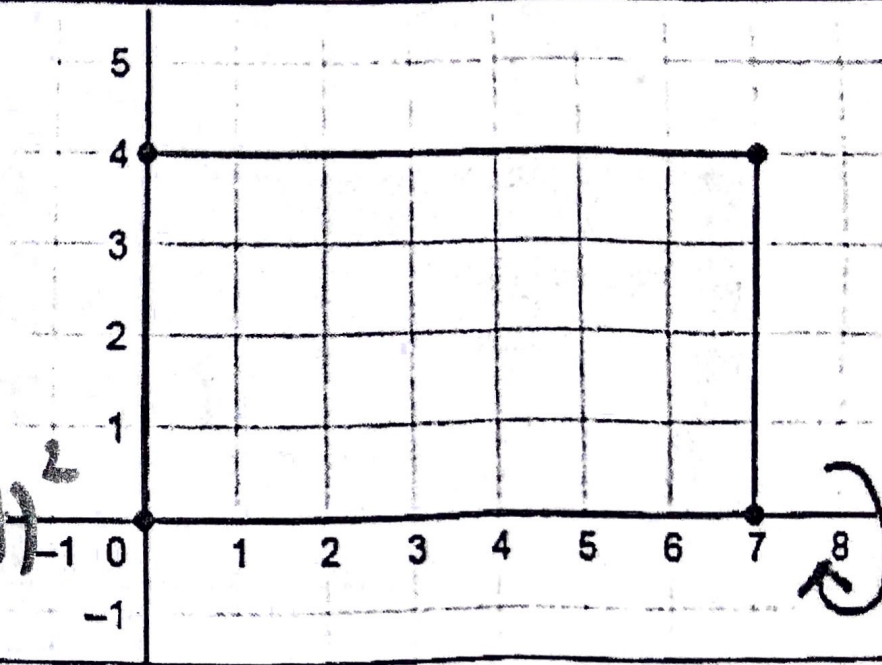
$$r = \underline{4} \quad h = \underline{7} \quad L = 2\pi(4)(7)$$

$$= 56\pi$$

$$\text{Volume: } \underline{112\pi \text{ units}^3}$$

$$T = 56\pi + 2\pi(4)^2$$

$$= 88\pi$$

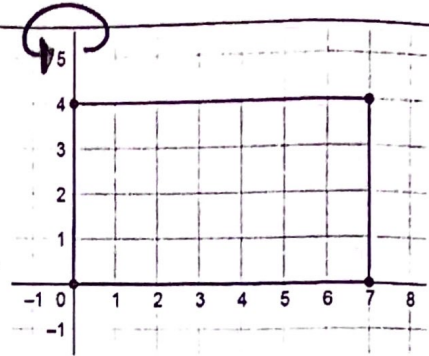


17. Find the radius, height, and volume of the solid formed when the rectangle in the figure is rotated about the  $y$ -axis. The vertices of the rectangle are  $(0,0)$ ,  $(7,0)$ ,  $(7,4)$  and  $(0,4)$ .

$$r = \underline{7} \quad h = \underline{4}$$

$$V = \pi \cdot 7^2 \cdot 4$$

Volume:  $196\pi$  units<sup>3</sup>

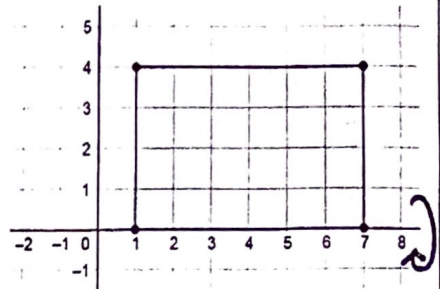


18. Find the radius, height, and volume of the solid formed when the rectangle in the figure is rotated about the  $x$ -axis. The vertices of the rectangle are  $(1,0)$ ,  $(7,0)$ ,  $(7,4)$  and  $(1,4)$ .

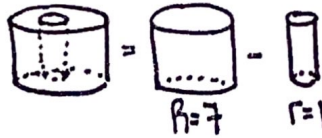
$$r = \underline{4} \quad h = \underline{6}$$

$$V = \pi \cdot 4^2 \cdot 6$$

Volume:  $96\pi$  units<sup>3</sup>

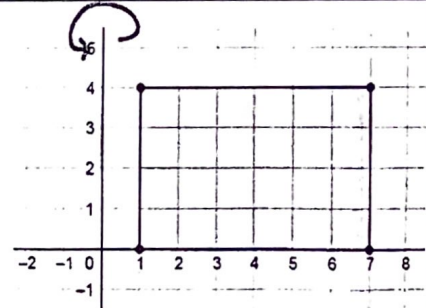


19. Find the volume of the solid formed when the rectangle in the figure is rotated about the  $y$ -axis. The vertices of the rectangle are  $(1,0)$ ,  $(7,0)$ ,  $(7,4)$  and  $(1,4)$ .



Volume:  $192\pi$  units<sup>3</sup>

$$V = \pi \cdot 7^2 \cdot 4 - \pi \cdot 1^2 \cdot 4$$

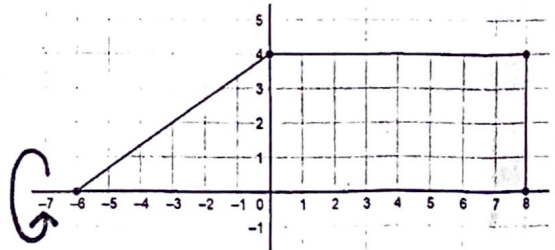


20. Find the volume of the solid formed when the quadrilateral in the figure is rotated about the  $x$ -axis. The vertices of the quadrilateral are  $(-6,0)$ ,  $(0,4)$ ,  $(8,4)$  and  $(8,0)$ .

Cone + Cylinder

$$\frac{1}{3} \cdot \pi \cdot 4^2 \cdot 6 + \pi \cdot 4^2 \cdot 8$$

Volume:  $1100\pi$  units<sup>3</sup>



21. Find the volume of the solid formed when the shaded region in the figure is rotated about the  $x$ -axis. The shaded region is a quarter circle (centered at  $(0,0)$  with the point  $(-4,0)$  on the circle) and a triangle with vertices at  $(0,0)$ ,  $(0,4)$ , and  $(7,0)$ .

Volume:  $80\pi$  units<sup>3</sup>

Hemisphere + Cone

$$\frac{1}{2} \cdot \frac{4}{3} \cdot \pi \cdot 4^3 + \frac{1}{3} \cdot \pi \cdot 4^2 \cdot 7$$

$$\frac{128}{3}\pi + \frac{112}{3}\pi$$

