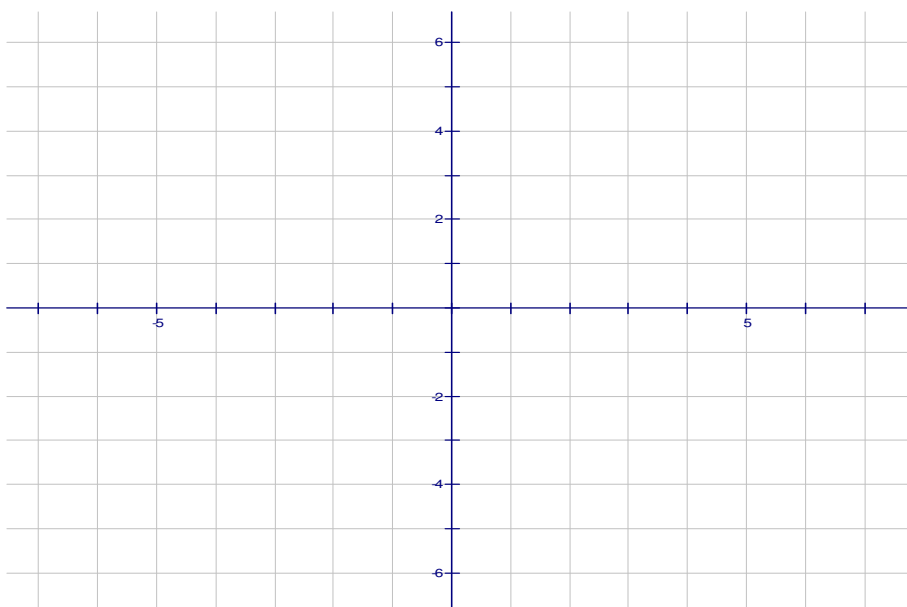


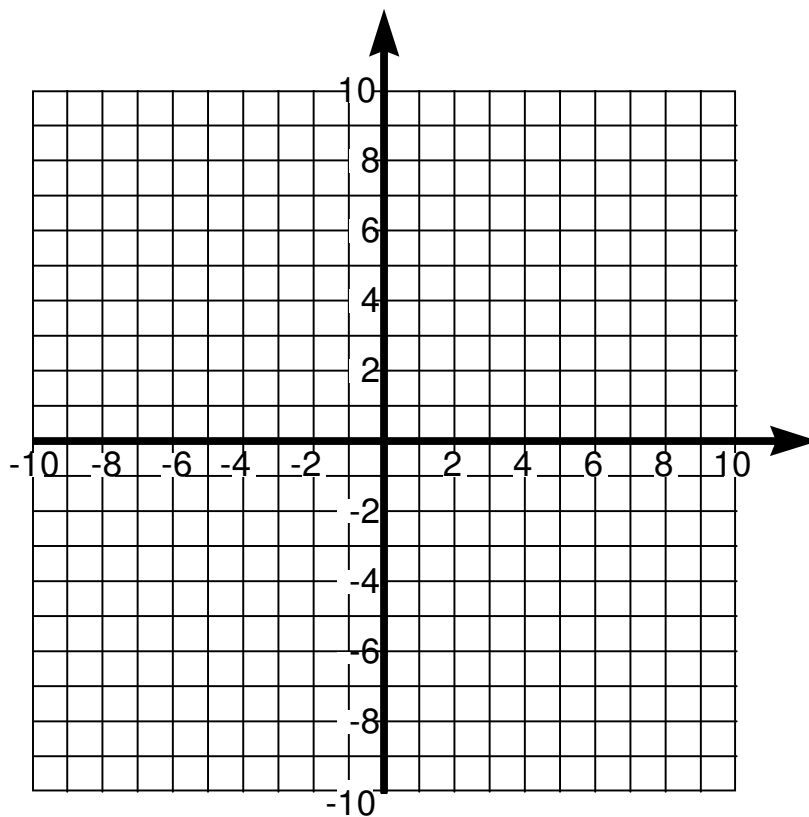
Volume using the Shell Method

- The shell method uses cylindrical shells.
 - $V = lwh$
 - The length is the circumference of the cylinder, or $2\pi r$
 - $r = p(x)$ or $r = p(y)$
 - The radius is the distance between any given rectangle you draw and the axis of revolution
 - The width is the change in x or the change in y
 - The height is the height of any rectangle you draw
 - $h(x)$ or $h(y)$
-

1. (15 POINTS) Find the volume of the solid bounded by the graph of $y = \cos x$, $x = 0$, $y = 0$, and $x = \frac{\pi}{2}$, which is then rotated about the line $y = 2$.



2. (15 POINTS) Find the volume of the solid bounded by the graph of $y = \sqrt{x}$, $y = 0$ and $x = 4$ which is then rotated about the line $x = 7$.

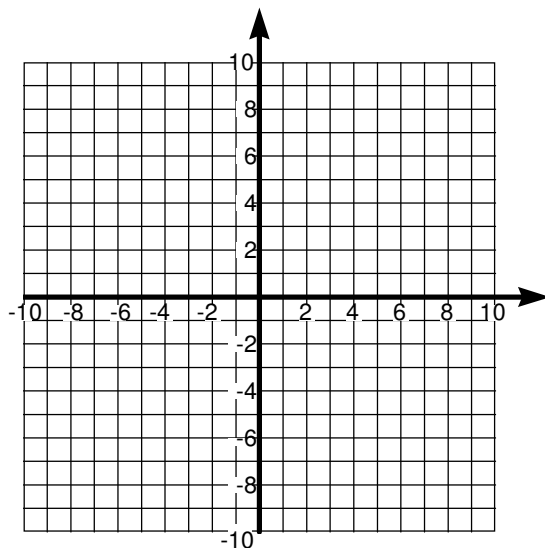


3. Sketch the region bounded by the graphs of $y = (x-2)^3$, $y=0$ and $x=4$, then **SET UP** the integrals which will find the volume of the solid created by rotated the region about

a. the line $y=0$

i. using the disc/washer method

ii. using the shell method.



b. the line $x=0$

i. using the disc/washer method

ii. using the shell method.

c. the line $x=8$

i. using the disc/washer method

ii. using the shell method.