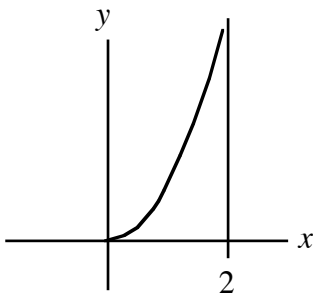
**Math 1B**

# Chapter 6 Pretest

## 6.1 Area under a curve

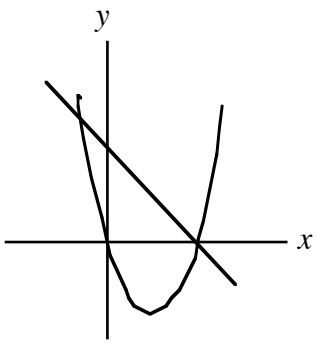
**1.** Consider the region bounded by the functions $y = x^3$, $x = 2$, and $y = 0$ (as shown). Find the area of this region by doing each of the following:

a) draw a typical rectangle, both inside of and outside of the region;
b) develop a formula for $A_i$;
c) write A as the limit of a sum of areas and simplify;
d) write the related integral and solve it.

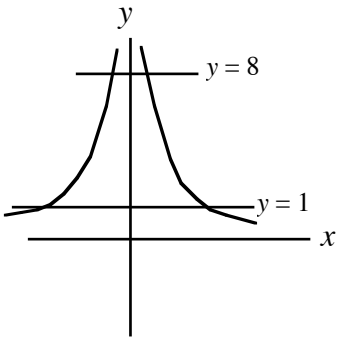



Find the area of the region bounded by the given curves/lines.

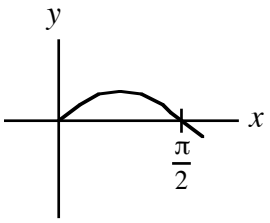
**2.** $y = x^2 - 4x$ and $y = 4 - x$




**3.** $y = \frac{1}{x^3}$, $y = \frac{-1}{x}$, $y = 1$, and $y = 8$

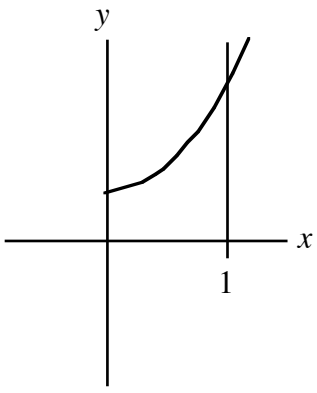



**4.** $y = \sin x \cos x$, $y = 0$, from $x = 0$ to $x = \frac{\pi}{2}$

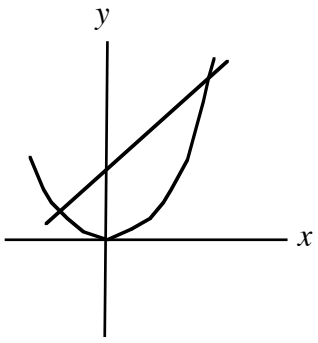



## 6.2 & 6.3 Volumes of Solids of Revolution

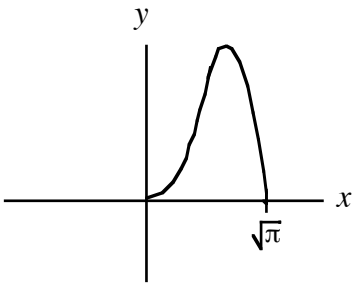
**5.** $y = e^x$, $y = 0$, from $x = 0$ to $x = 1$, rotated about the $x$-axis.




**6.** $y = x^2$, $y = x + 2$, rotated about the $x$-axis.

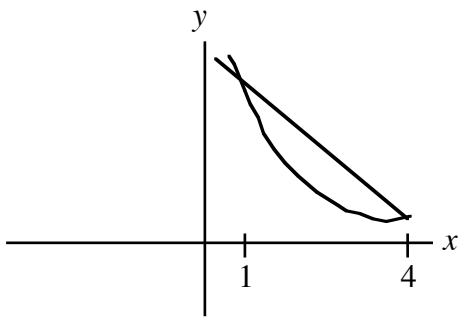



**7.** $y = \sin(x^2)$, $y = 0$, from $x = 0$ to $x = \sqrt{\pi}$, rotated about the $y$-axis.

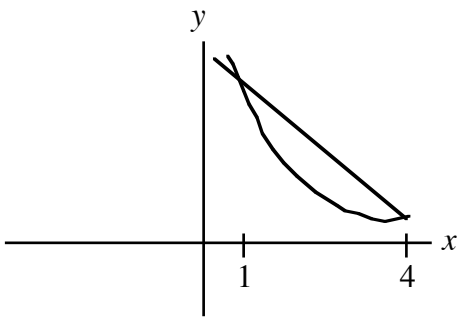


**8.** Consider the region bounded by the functions $y = \frac{4}{x}$ and $y = 5 - x$ (as shown). Use both the washer and cylindrical shell methods to find the volume of the region rotated about the $y$-axis.

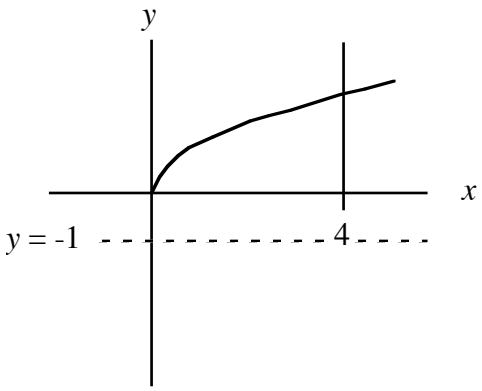
Washer Method




Cylindrical Shell Method




**9.** $y = \sqrt{x}$, $y = 0$, and $x = 4$
rotated about the line $y = -1$.




**10.** $y = 2x - x^2$ and $y = 0$
rotated about the line $x = -1$.