

### Area Between Curves (6.1)

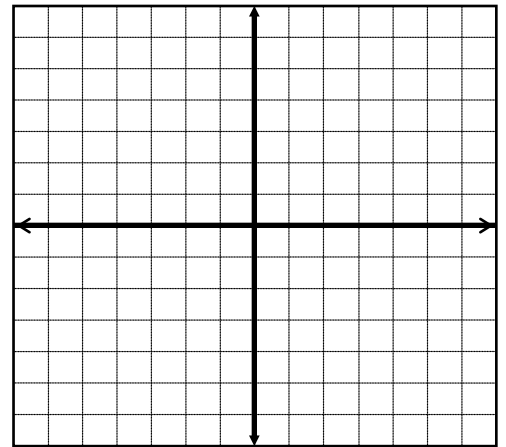
$$A = \int_a^b \left( \begin{array}{c} \text{upper} \\ \text{function} \end{array} \right) - \left( \begin{array}{c} \text{lower} \\ \text{function} \end{array} \right) dx, \quad a \leq x \leq b$$

**or**

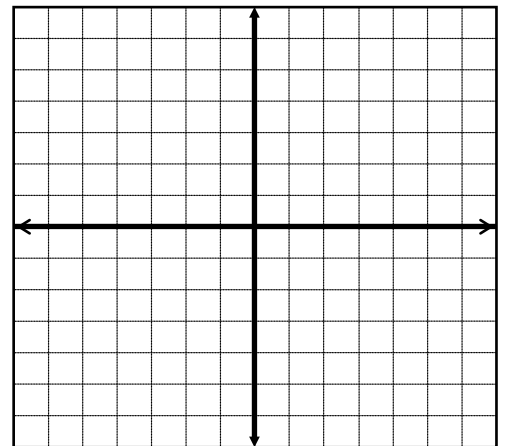
$$A = \int_c^d \left( \begin{array}{c} \text{right} \\ \text{function} \end{array} \right) - \left( \begin{array}{c} \text{left} \\ \text{function} \end{array} \right) dy, \quad c \leq y \leq d$$

**Areas Between Curves:** *Sketch the graphs and find the area between the curves.*

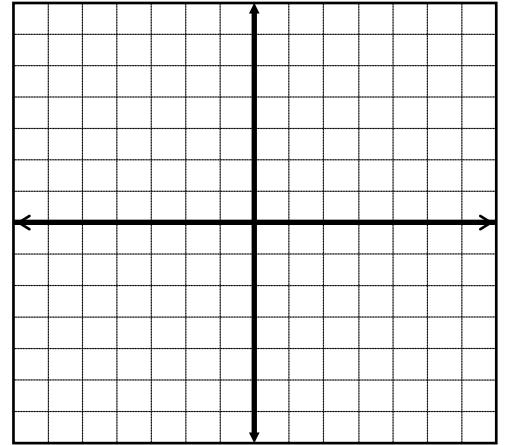
- 1) Find the area of the region enclosed by  $y = x^2$  and  $y = \sqrt{x}$ .



- 2) Find the area of the region enclosed by  $y = 2x^2 + 10$  and  $y = 4x + 16$ .



- 3) Find the area of the region enclosed by  $y = \sin x$ ,  $y = \cos x$ ,  $x = \frac{\pi}{2}$  and the  $y$ -axis.



- 4) Find the area of the region enclosed by  $x = \frac{1}{2}y^2 - 3$  and  $y = x - 1$ .

