

Area Between Curves (6.1)

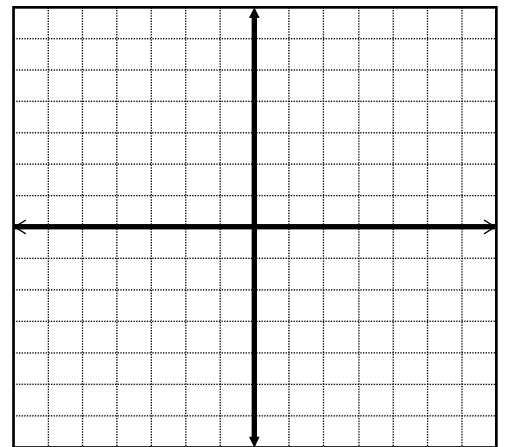
$$A = \int_a^b \left(\begin{array}{c} \text{upper} \\ \text{function} \end{array} \right) - \left(\begin{array}{c} \text{lower} \\ \text{function} \end{array} \right) dx, \quad a \leq x \leq b$$

or

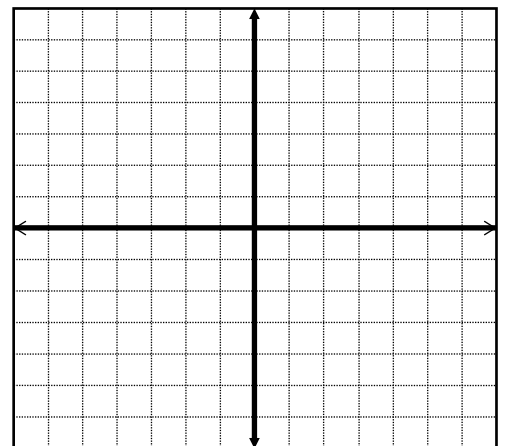
$$A = \int_c^d \left(\begin{array}{c} \text{right} \\ \text{function} \end{array} \right) - \left(\begin{array}{c} \text{left} \\ \text{function} \end{array} \right) dy, \quad c \leq y \leq d$$

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

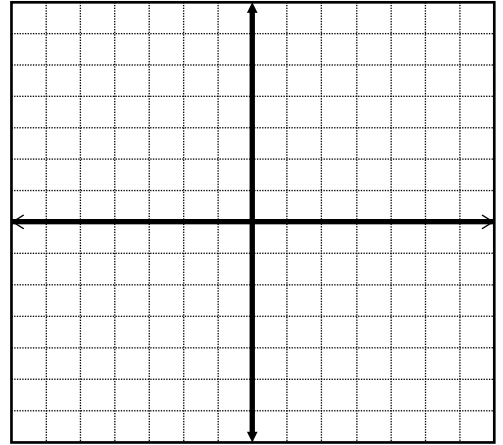
- 1) Find the area of the region enclosed by $y = x^2$ and $y = \sqrt{x}$.



- 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 $y = x - 1$.

