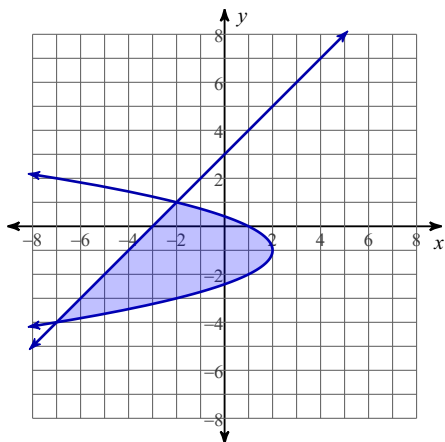


Worksheet 15 - Areas with Functions of y

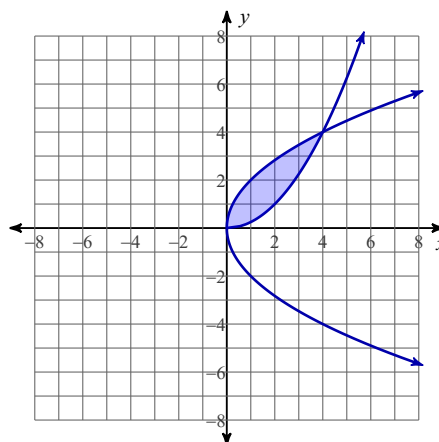
- 1) The area of a region is completely enclosed by the y -axis and the graph of $x = 4 - y^2$. Use y as the variable of integration to write a definite integral that defines the area.
- 2) Set up a definite integral in terms of x and then in terms of y that give the area between the curves $y = \sqrt{x}$ and $y = -\sqrt{x}$ for $0 \leq x \leq 9$.

For each problem, find the area of the region enclosed by the curves.

3) $x = -y^2 - 2y + 1$, $x = y - 3$



4) $x = 2\sqrt{y}$, $x = \frac{y^2}{4}$



$$5) \begin{aligned} x &= -(y+3)^2 + 5, & x &= -y^2 + 2, \\ y &= -3, & y &= 0 \end{aligned}$$

$$6) \begin{aligned} x &= \sqrt{y}, & x &= 2\sqrt{y}, \\ y &= 0, & y &= 4 \end{aligned}$$

$$7) \begin{aligned} x &= (y-1)^2 - 6, & x &= -2 \end{aligned}$$

$$8) \begin{aligned} x &= \frac{2}{y^2}, & x &= 2, \\ y &= 1, & y &= 4 \end{aligned}$$