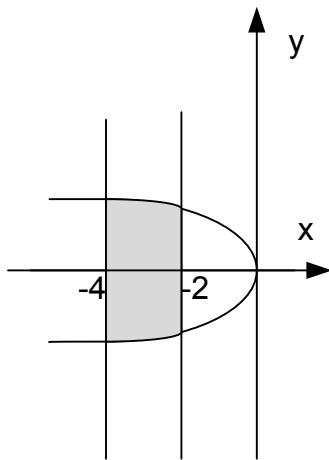
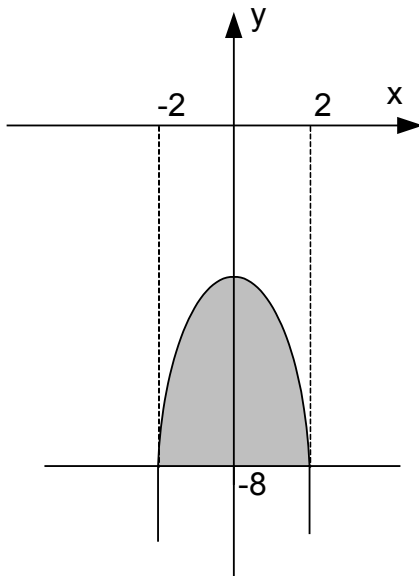


Find the area:

a)  $y^2 = -x, x = -2, x = -4$

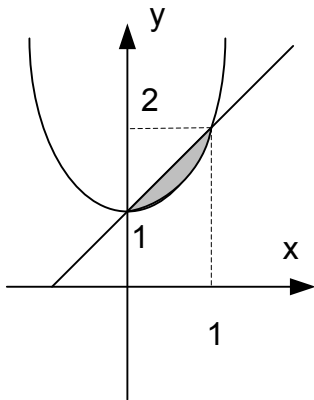


b)  $x^2 + y + 4 = 0, y = -8$ . Take the elements of area parallel to the y-axis.



$$S = 2 \int_0^2 (-x^2 - 4 + 8) dx = 2 \left( 4x - \frac{x^3}{3} \right) \Big|_0^2 = \frac{32}{3}$$

c)  $x^2 - y + 1 = 0$  ,  $x - y + 1 = 0$  . Take the elements parallel to the x-axis.



$$x^2 - y + 1 = x - y + 1$$

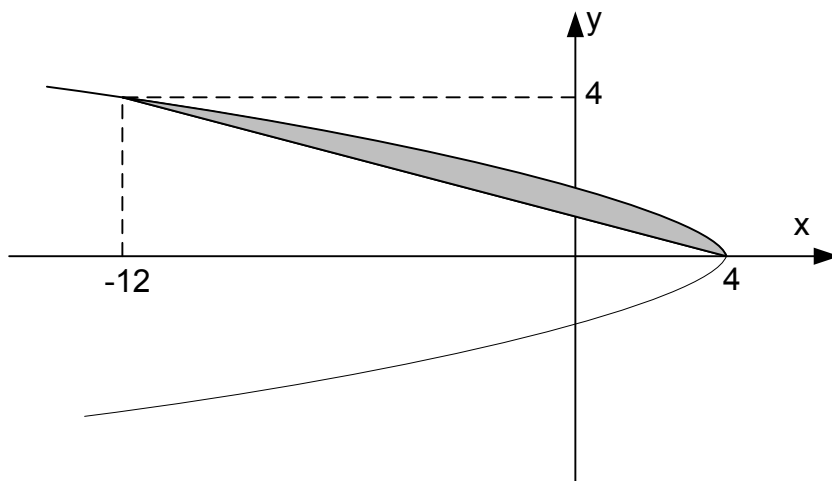
$$x = 0 \text{ and } x = 1$$

When  $x = 0$  , then  $y = 1$

When  $x = 1$  , then  $y = 2$

$$S = \int_1^2 (\sqrt{y-1} - y + 1) dy = \left( \frac{2}{3} \sqrt{y-1} - \frac{1}{2} y^2 + y \right) \Big|_1^2 = \frac{2}{3} - 2 + 2 + \frac{1}{2} - 1 = \frac{1}{6}$$

d)  $x = 4 - y^2$  ,  $x = 4 - 4y$



$$4 - y^2 = 4 - 4y$$

$$y^2 - 4y = 0$$

$$y = 0 \text{ and } y = 4$$

$$S = \int_0^4 (4 - y^2 - 4 + 4y) dy = \left( -\frac{1}{3}y^3 + 2y^2 \right) \Big|_0^4 = -\frac{64}{3} + 32 = \frac{32}{3}$$