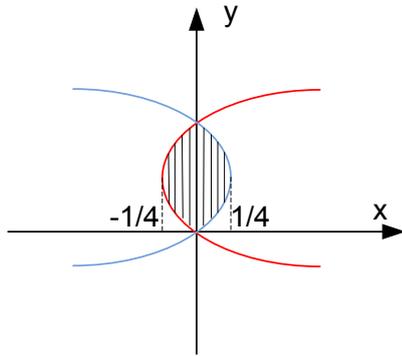


Find the area bounded by  $x = y^2 - y$  and  $x = y - y^2$ , take the elements of the area parallel to y-axis.



$x = y^2 - y$  - red line

$$x = \left(y - \frac{1}{2}\right)^2 - \frac{1}{4}$$

$$y = \pm \sqrt{x + \frac{1}{4}} + \frac{1}{2}$$

$x = y - y^2$  - blue line

$$x = -\left(y - \frac{1}{2}\right)^2 + \frac{1}{4}$$

$$y = \pm \sqrt{\frac{1}{4} - x} + \frac{1}{2}$$

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

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

$$S = \int_{-\frac{1}{4}}^0 \left( \left( \sqrt{x + \frac{1}{4}} + \frac{1}{2} \right) - \left( -\sqrt{x + \frac{1}{4}} + \frac{1}{2} \right) \right) dx + \int_0^{\frac{1}{4}} \left( \left( \sqrt{\frac{1}{4} - x} + \frac{1}{2} \right) - \left( -\sqrt{\frac{1}{4} - x} + \frac{1}{2} \right) \right) dx =$$

$$= \int_{-\frac{1}{4}}^0 2 \left( \sqrt{x + \frac{1}{4}} + \frac{1}{2} \right) dx + \int_0^{\frac{1}{4}} 2 \left( \sqrt{\frac{1}{4} - x} + \frac{1}{2} \right) dx =$$

$$= \left( \frac{4}{3} \sqrt{\left(x + \frac{1}{4}\right)^3} + x \right) \Big|_{-\frac{1}{4}}^0 + \left( -\frac{4}{3} \sqrt{\left(\frac{1}{4} - x\right)^3} + x \right) \Big|_0^{\frac{1}{4}} = \frac{4}{3} \sqrt{\left(\frac{1}{4}\right)^3} + \frac{1}{4} + \frac{1}{4} + \frac{4}{3} \sqrt{\left(\frac{1}{4}\right)^3} = \frac{5}{6}$$