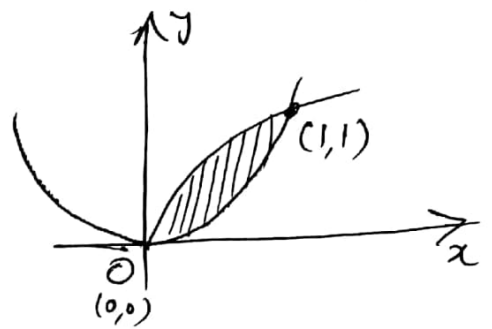


- ② Find the area of the region enclosed by $y = x^2$ and $y = \sqrt{x}$.

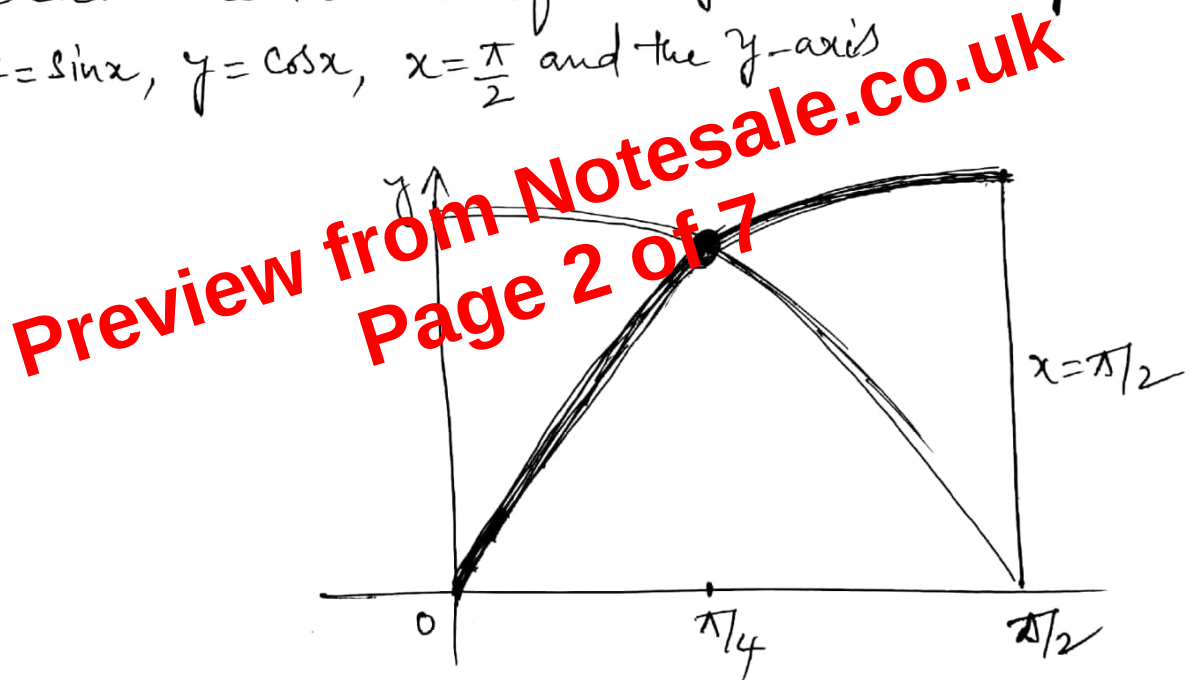
Sol. Area = $\int_0^1 (\sqrt{x} - x^2) dx$

$$= \left[\frac{2}{3} x^{3/2} - \frac{1}{3} x^3 \right]_0^1$$

$$= \frac{1}{3} \text{ sq. units}$$



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



$$\begin{aligned} \text{Area} &= \int_0^{\pi/4} (\cos x - \sin x) dx + \int_{\pi/4}^{\pi/2} (\sin x - \cos x) dx \\ &= (\sin x + \cos x) \Big|_0^{\pi/4} + (-\cos x - \sin x) \Big|_{\pi/4}^{\pi/2} \\ &= (\sqrt{2} - 1) + (\sqrt{2} - 1) = 2\sqrt{2} - 2 \\ &= 0.828427 \text{ sq. units} \end{aligned}$$