

## Sheet-6

**Q.1** Find the area of the region that is outside the circle  $r = \sin \theta$  and inside the circle  $r = 2 \sin \theta$ .

*Answer:*  $\frac{3\pi}{4}$ .

**Q.2** Use double integral to find the area of the region bounded by the graphs of the equations  $y = \sqrt{1 - x^2}$  and  $x + y = 1$ .

*Answer:*  $\frac{\pi}{4} - \frac{1}{2}$ .

**Q.3** Find the area of the region bounded by the graphs of the equations  $y = \sqrt{1 - x^2}$ ,  $y = x$  and  $y = -x$ .

*Answer:*  $\frac{\pi}{4}$ .

**Q.4** Find the area of the region bounded by the graphs of the equations  $y = \sqrt{2x - x^2}$ ,  $y = x$  and  $y = -x$ .

*Answer:*  $\frac{\pi}{2} + 1$ .

**Q.5** Find the volume of the solid bounded by the graphs of the equations  $z = x^2 + y^2$ ,  $x^2 + y^2 = 2x$  and  $z = 0$ .

*Answer:*  $3\pi$ .

**Q.6** Find the volume of the solid bounded by the graphs of the equations  $z = \sqrt{x^2 + y^2}$ ,  $x^2 + y^2 = 1$  and  $z = 0$ .

*Answer:*  $\frac{2\pi}{3}$ .

**Q.7** Find the volume of the solid bounded by the graphs of the equations  $z = \sqrt{x^2 + y^2}$ ,  $x^2 + y^2 = 2x$  and  $z = 0$ .

*Answer:*  $\frac{32}{9}$ .