

$$r = \sqrt{\sin \theta}, \quad 0 \leq \theta \leq \pi.$$

$$A = \int_0^\pi \frac{1}{2} \left(\sqrt{\sin \theta} \right)^2 d\theta = \int_0^\pi \frac{1}{2} \sin \theta d\theta = \left[-\frac{1}{2} \cos \theta \right]_0^\pi = \frac{1}{2} + \frac{1}{2} = 1$$