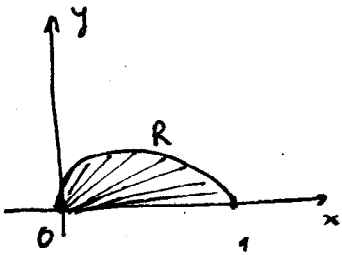


MATH 116-02 QUIZ 8

Surname\ Name:

ID:

Problem. Find the area of the region in the first quadrant bounded by the curve $r^2 = \cos \theta$ and the line $\theta = 0$.



$$\text{Area}(R) = \int_0^{\frac{\pi}{2}} \int_0^{\sqrt{\cos \theta}} r \, dr \, d\theta =$$

$$= \int_0^{\frac{\pi}{2}} \left. \frac{r^2}{2} \right|_{r=0}^{r=\sqrt{\cos \theta}} d\theta =$$

$$= \int_0^{\frac{\pi}{2}} \frac{\cos \theta}{2} d\theta = \left. \frac{\sin \theta}{2} \right|_0^{\frac{\pi}{2}} = \frac{1}{2} \text{ units}^2.$$