

DIRECTIONS To receive full credit, you must provide complete legible solutions to the following problems in the space provided. No Attached papers. Transfer all your answers to the space provided

1. Find the area of the region enclosed by one loop of the curve. Ans: _____
 $r = 8\sin(5\theta)$. Be sure to sketch the curve and shade the area.

2. Find the area of the region that lies inside the first curve and outside the second curve. Be sure to sketch the curve and shade the area. Ans: _____
 $r = 13\sin\theta, \quad r = 7 - \sin\theta$

3. Find the area of the region that lies inside both curves.
Be sure to sketch the curve and shade the area.

Ans: _____

$$r = \sin(2\theta), \quad r = \cos(2\theta)$$

4. Find the exact length of the polar curve.

Ans: _____

$$r = \theta^2, \quad 0 \leq \theta \leq \pi / 2$$