

# Math 2300-013: Quiz 12

Name: \_\_\_\_\_

Score: \_\_\_\_\_

1. Find the area of the region that lies inside both  $r = 1 + \sin \theta$  and  $r = 3 \sin \theta$ .

2. Write an integral expression that represents the arc length of the outer loop of the limaçon  $r = 1 - 2 \cos \theta$ .