

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

**Worksheet 8.2—Polar Area**Show all work. **Calculator permitted** except unless specifically stated.**Short Answer:** Sketch a graph, shade the region, and find the area.

1. one petal of  $r = 2 \cos(3\theta)$

2. one petal of  $r = 4 \sin(2\theta)$

3. interior of  $r = 2 + 2 \cos \theta$   
(no calculator)

4. interior of  $r = 2 - \sin \theta$   
(no calculator)

5. interior of  $r^2 = 4\sin(2\theta)$

6. inner loop of  $r = 1 + 2\cos\theta$

7. between the loops of  $r = 1 + 2\cos\theta$

8. one loop of  $r^2 = 4\cos(2\theta)$

9. inside  $r = 3 \cos \theta$  and outside  $r = 2 - \cos \theta$

10. common interior of  $r = 4 \sin \theta$  and  $r = 2$

11. inside  $r = 3 \sin \theta$  and outside  $r = 1 + \sin \theta$

12. common interior of  $r = 3 \cos \theta$  and  $r = 1 + \cos \theta$

13. common interior of  $r = 4\sin(2\theta)$  and  $r = 2$

14. inside  $r = 2$  and outside  $r = 2 - \sin\theta$

15. inside  $r = 2 + 2\cos(2\theta)$  and outside  $r = 2$