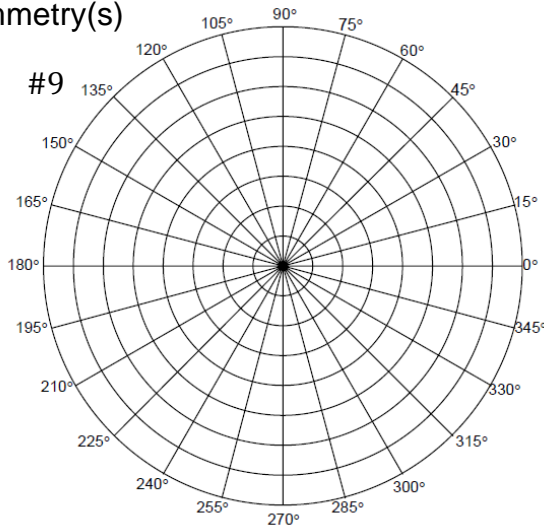


1. Convert  $P\left(8, \frac{5\pi}{6}\right)$  to Rectangular.
2. Convert  $R(-5, -5)$  to Polar.
3. Given the polar coordinate  $(4, 240^\circ)$  find 4 other ordered pairs to represent the same point with:  
 $(r, \theta); (-r, \theta); (r, -\theta); (-r, -\theta)$ .

For the polar equations in # 4 – 7, (a) identify the graph by name and (b) list any symmetry(s)

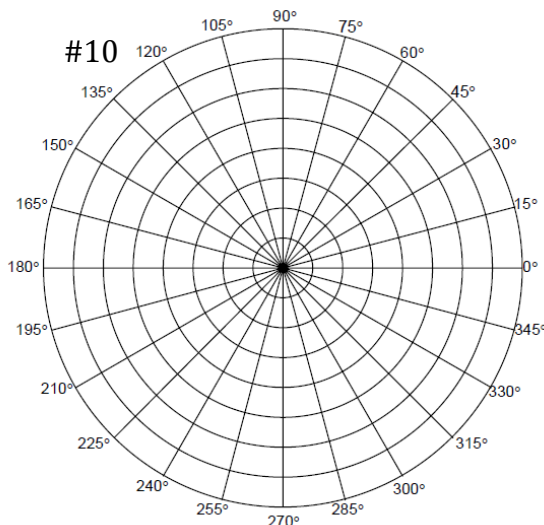
4.  $r = 3 + 5\sin\theta$
5.  $r = 7\cos3\theta$
6.  $r = 4 + 4\cos\theta$
7.  $r = 7\cos\theta$



8. Find the angles (degrees) where petals occur for the rose:  $r = 35078924\sin9\theta$
9. Graph the equation from # 4.
10. Graph the equation from # 6.
11. Convert  $7\sqrt{3} - 7i$  to a polar complex number.
12. Convert  $z = 10\text{cis} \frac{11\pi}{6}$  to a rectangular complex number

For #13 – 19, use  $z_1 = 5 - 3i$ ;  $z_2 = 4 + 2i$ ;  $z_3 = 27\text{cis}90^\circ$ ;  $z_4 = 3\text{cis}20^\circ$  to find:

13.  $z_1 + z_2$
14.  $z_1 * z_2$
15.  $z_1 \div z_2$
16.  $z_3 * z_4$
17.  $z_3 \div z_4$
18.  $\sqrt[3]{z_3}$  (3 answers)
19.  $(z_4)^5$



1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
- \_\_\_\_\_

4a. \_\_\_\_\_ b. \_\_\_\_\_

5a. \_\_\_\_\_ b. \_\_\_\_\_

6a. \_\_\_\_\_ b. \_\_\_\_\_

7a. \_\_\_\_\_ b. \_\_\_\_\_

8. \_\_\_\_\_

\_\_\_\_\_

9. Graph to left

10. Graph to left and below

11. \_\_\_\_\_

12. \_\_\_\_\_

13. \_\_\_\_\_

14. \_\_\_\_\_

15. \_\_\_\_\_

16. \_\_\_\_\_

17. \_\_\_\_\_

18. \_\_\_\_\_

\_\_\_\_\_

19. \_\_\_\_\_