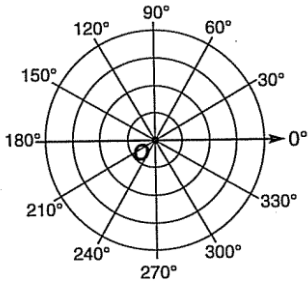


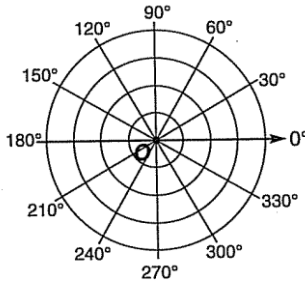
**9.1: Polar Coordinates**

Graph each of the following points, then give two other coordinates that name the same point:

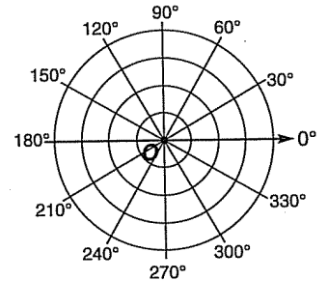
1.  $[2.5, 0^\circ]$



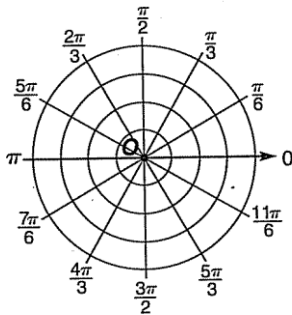
2.  $[3, -135^\circ]$



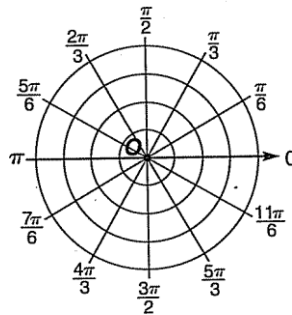
3.  $[-1, -30^\circ]$



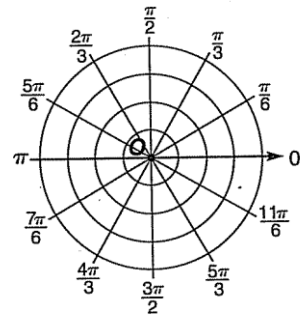
4.  $[-2, \frac{\pi}{4}]$



5.  $[1, \frac{5\pi}{4}]$

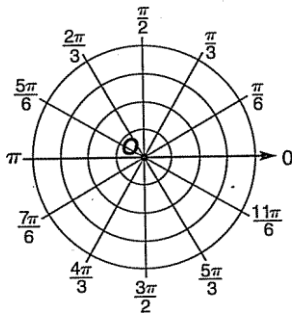


6.  $[2, -\frac{2\pi}{3}]$

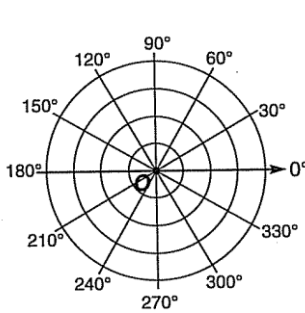


Graph each of the following polar equations:

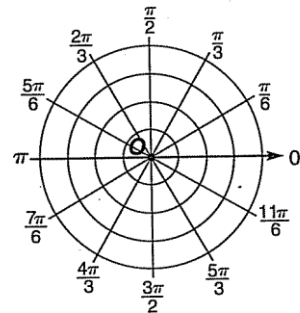
7.  $r = 3$



8.  $\theta = 60^\circ$



9.  $r = 4$



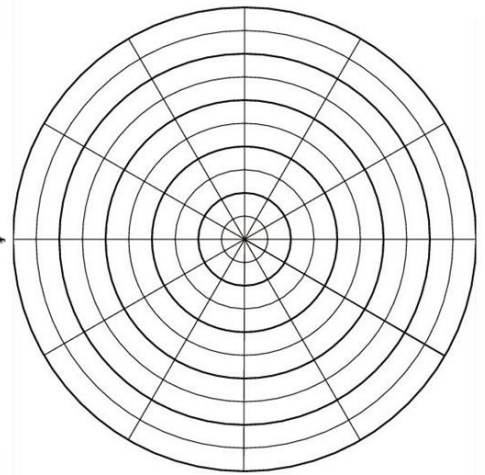
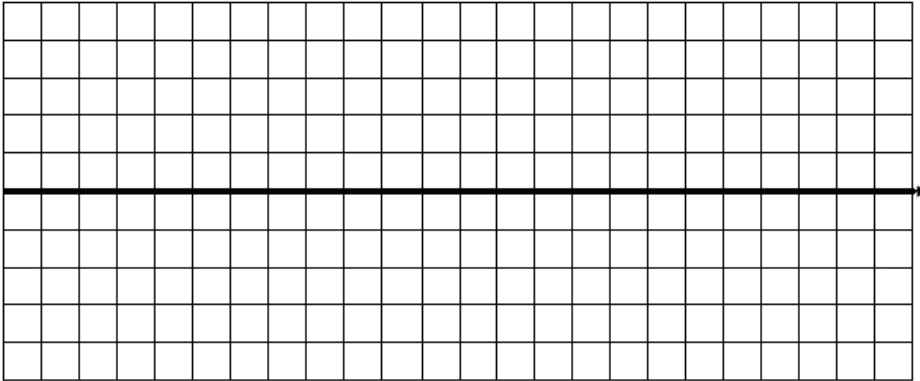
Find the distance between the two points with the given polar coordinates:

10.  $P_1[6, 90^\circ]$  and  $P_2[2, 130^\circ]$

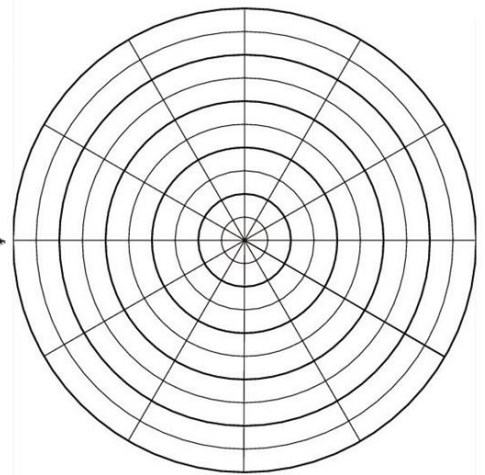
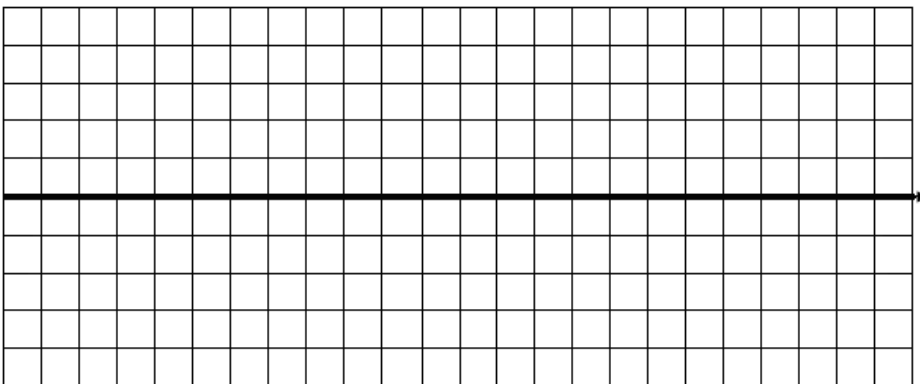
11.  $P_1[-4, 85^\circ]$  and  $P_2[1, 105^\circ]$

**9.2: Graphs of Polar Equations**

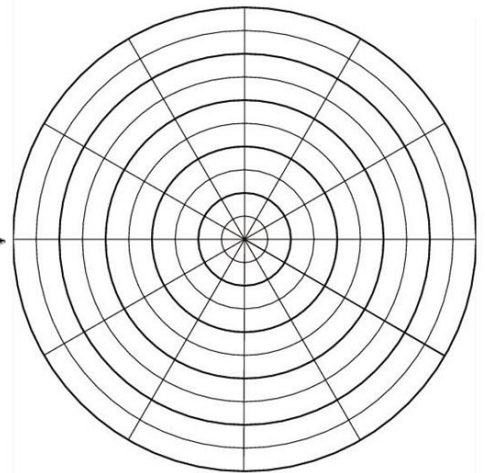
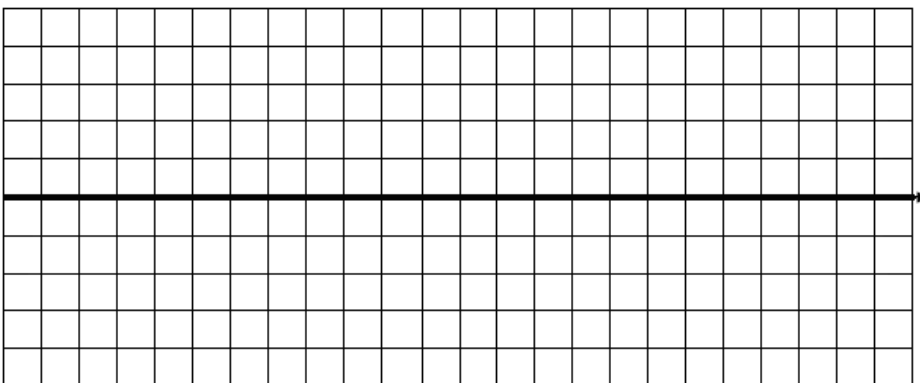
Problem 1:  $r = 1 + 2\cos \theta$



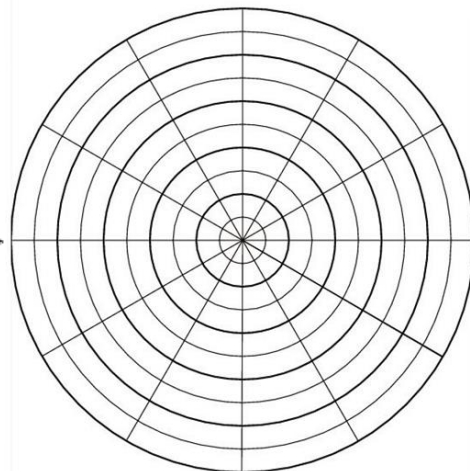
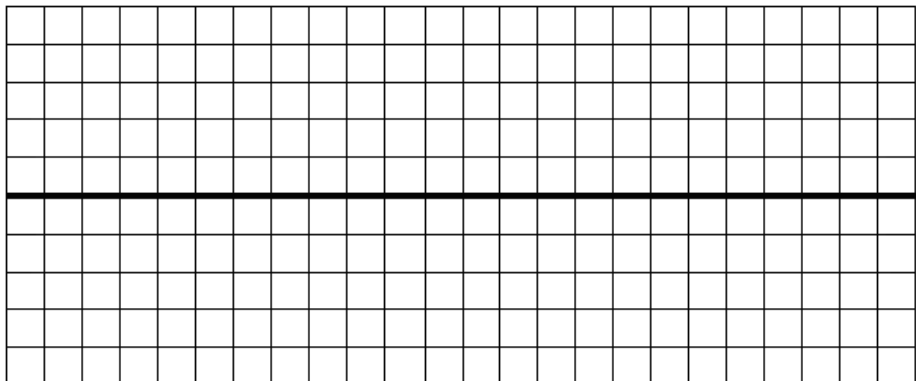
Problem 2:  $r = 3\sin 2\theta$



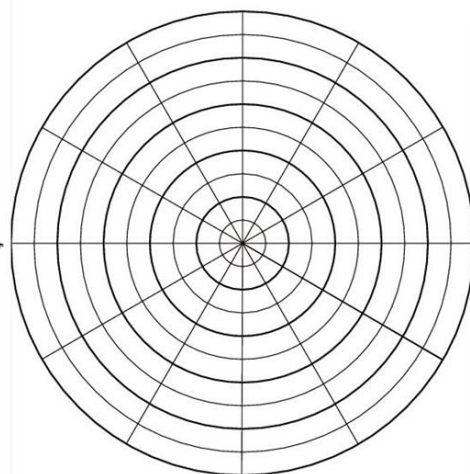
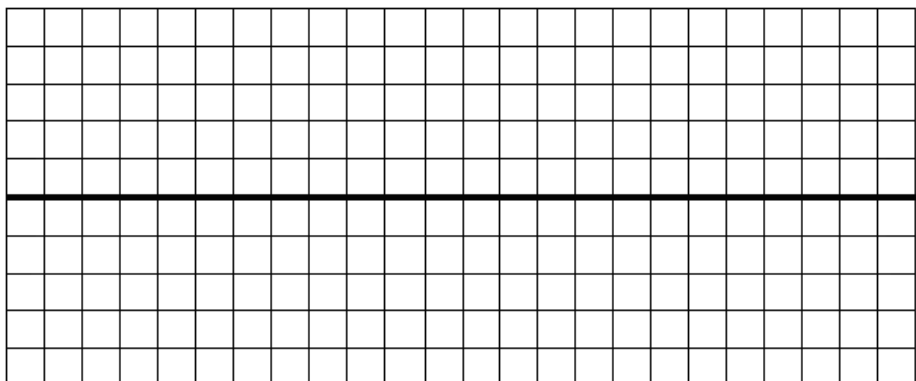
Problem 3:  $r = \cos 2\theta$



Problem 4:  $r = 2 + 3\sin \theta$



Problem 5:  $r = 2 \sin 3\theta$

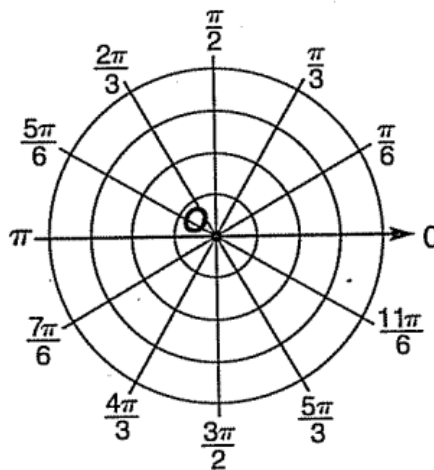


**1. Challenge Problem:**

*Graph the system of polar equation, then use the graph to solve the system.*

$$r = 1 + 2\sin \theta$$

$$r = 2 + \sin \theta$$



**9.3: Polar and Rectangular Coordinates**

*Find the rectangular coordinates for each point with the given polar coordinates:*

1.  $[6, 120^\circ]$

2.  $[-4, 45^\circ]$

3.  $[4, \frac{\pi}{6}]$

4.  $[0, \frac{13\pi}{3}]$

*Find the polar coordinates for each point with the given rectangular coordinates:*

5.  $(2, 2)$

6.  $(2, -3)$

7.  $(-3, \sqrt{3})$

8.  $(-5, -8)$