

Math 120 – Teamwork # 7

You may write your work here, on the back, or on another sheet of paper. Please box your answers. Round to three decimal places where necessary.

1. Convert the following coordinates as stated. Give angles in degrees.

a. $(-3\sqrt{3}, 3)$; rectangular to polar

b. $(\sqrt{2}, -\frac{\pi}{4})$; polar to rectangular

2. Complete the square and find the (i) center and (ii) radius of the circle.

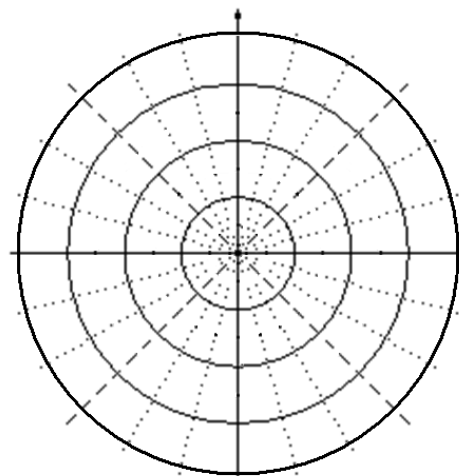
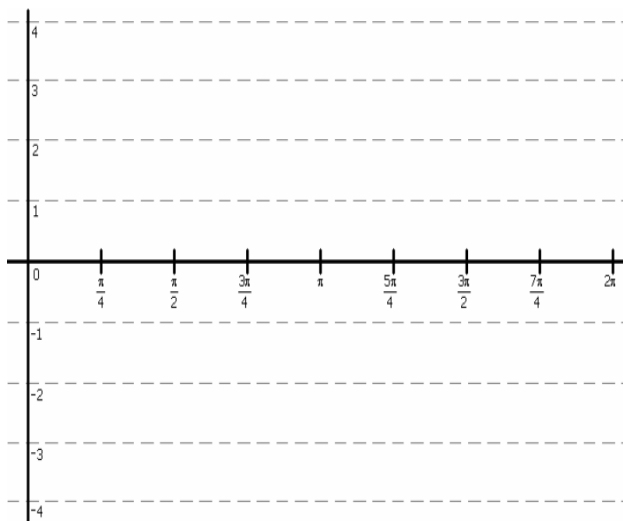
a. $x^2 + y^2 + 6y + 2 = 0$

b. $x^2 + y^2 - 2x + 4y + 1 = 0$

c. $x(x + 2) + y(y + 2) = y - 1$

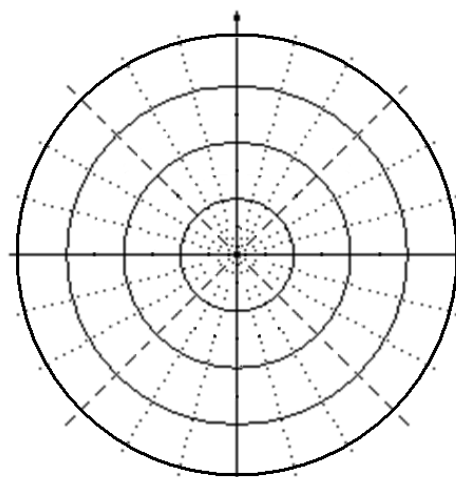
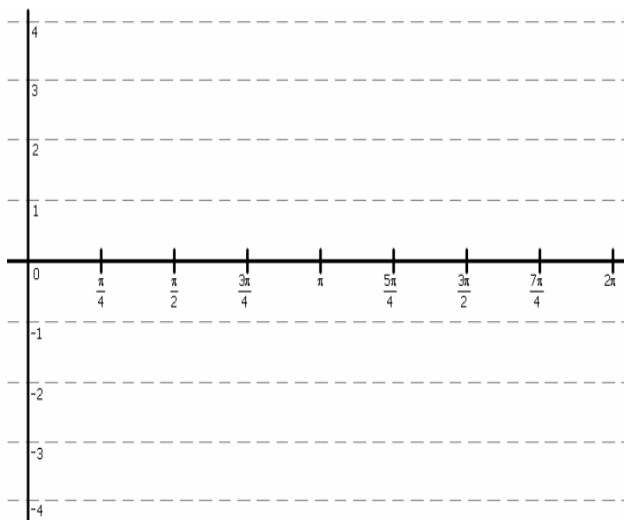
3. a. Graph the function $r = 1.5 + 2.5 \cos \theta$

x θ	y r
0	
$\frac{\pi}{4}$	
$\frac{\pi}{2}$	
$\frac{3\pi}{4}$	
π	
$\frac{5\pi}{4}$	
$\frac{3\pi}{2}$	
$\frac{7\pi}{4}$	
2π	



b. Graph the function $r = 4 \cos(2\theta)$

x θ	y r
0	
$\frac{\pi}{4}$	
$\frac{\pi}{2}$	
$\frac{3\pi}{4}$	
π	
$\frac{5\pi}{4}$	
$\frac{3\pi}{2}$	
$\frac{7\pi}{4}$	
2π	



4. Convert the following complex numbers as stated. Give angles in degrees.

a. $6(\cos 30^\circ + i \sin 30^\circ)$; polar to rectangular

b. $4 - 5i$; rectangular to polar