

1. Find the Cartesian coordinates for the polar coordinate

a)  $(2, 7\pi/4)$  \_\_\_\_\_

b)  $(-3, -2\pi/3)$  = \_\_\_\_\_

and two different Polar coordinates for the points:

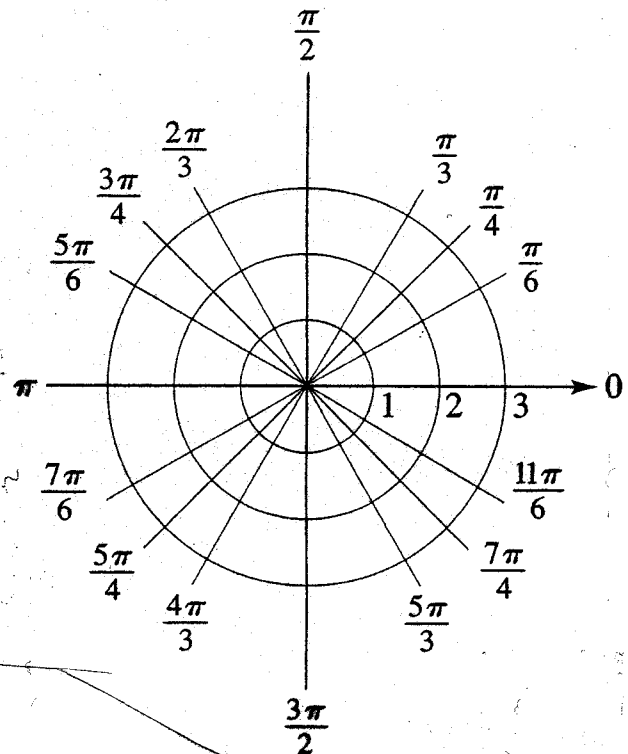
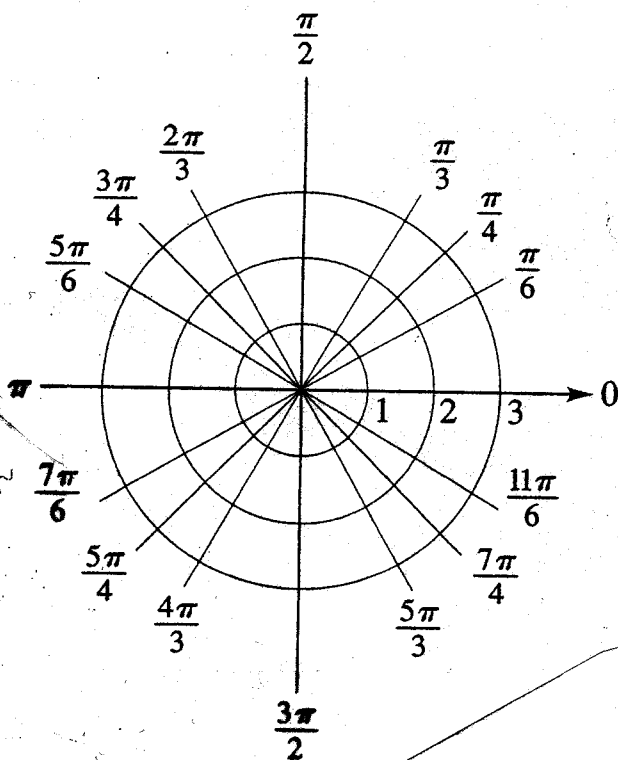
a)  $(-2, -2)$  \_\_\_\_\_ and \_\_\_\_\_

b)  $(3, -2)$  \_\_\_\_\_ and \_\_\_\_\_

2. Sketch the curve with the given polar equation.

a)  $r = 1 + \cos 2\theta$

b)  $r = \sin 3\theta$



3. Find the slope of the tangent line to the curve  $r = \sin 2\theta$  at  $\theta = \frac{\pi}{6}$

4. Find the points on the curve  $r = e^\theta$  where the tangent line is horizontal or vertical.

5. Find a polar equation for the curve represented by the Cartesian equation  $x + y = 3$ .

6. Find the distance between the two points with polar coordinates  $(2, \frac{\pi}{6})$  and  $(1, \frac{3\pi}{4})$ .