Problem 1: Give cartesian coordinates for the following points with given polar coordinates:

(a) $(5, 0)$

(b) $(5, \pi)$

(c) $(1, 2\pi/3)$

(d) $(2, 5\pi/6)$

Problem 2: Give polar coordinates for the following points with given cartesian coordinates:

(a) $(1, 1)$

(b) $(-1, 0)$

(c) $(\sqrt{6}, -\sqrt{2})$

(d) $(-\sqrt{3}, 1)$

Problem 3: Graph the following functions in the xy-plane.

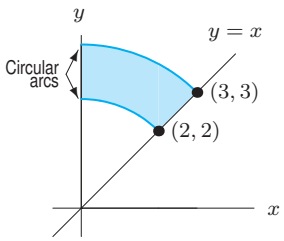
(a) $r = 1$

(b) $r = \theta$

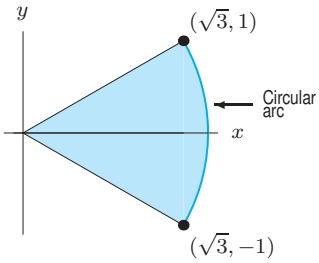
(c) $r = 1 - \sin(\theta)$

Problem 4: Give inequalities in terms of r and θ which describe the following regions in the xy-plane.

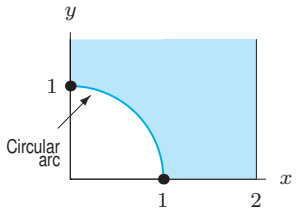
(a)



(b)



(c)



Note: Region extends indefinitely in the y-direction.