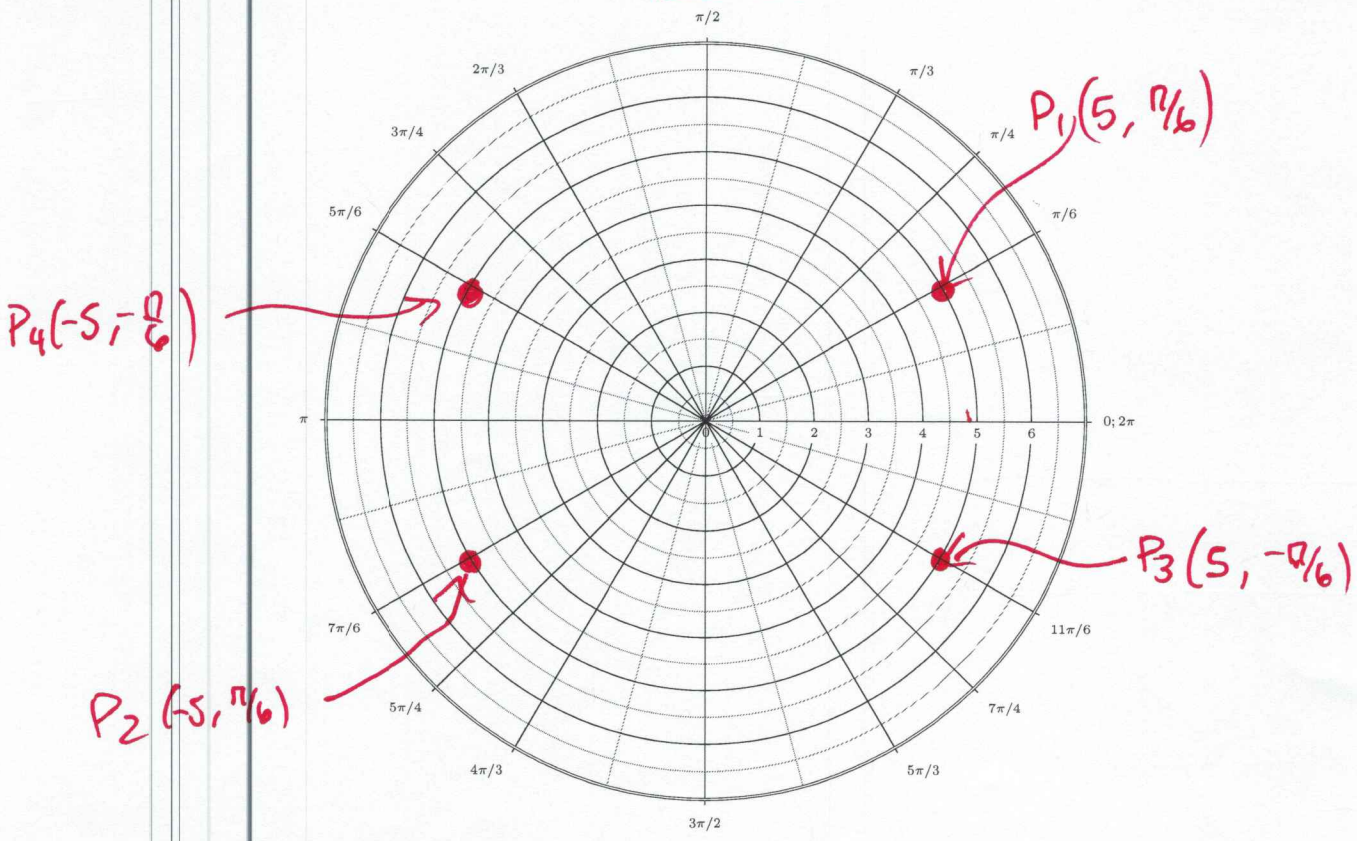
KEY

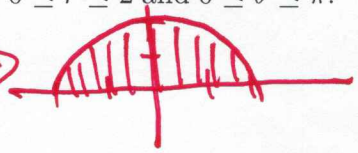
Should be $(5, -\pi/6)$

10. (a) Plot the points $P_1(5, \pi/6)$, $P_2(-5, \pi/6)$, $P_3(5, \pi/6)$, and $P_4(-5, -\pi/6)$.



(b) Describe the set of points P whose polar coordinates (r, θ) satisfy $0 \le r \le 2$ and $0 \le \theta \le \pi$.

This is the half disk, upper half: →



(c) Convert the following points to polar coordinates:

$$\left(2, 2\sqrt{3}\right), \quad \left(-2, -2\sqrt{3}\right), \quad (-1, 1), \quad (1, -1), \quad (3, 7).$$

$(4, \pi/3)$ $\quad$ $(4, \frac{-2\pi}{3})$ $\quad$ $(\sqrt{2}, \frac{3\pi}{4})$ $\quad$ $(\sqrt{2}, -\frac{\pi}{4})$ $\quad$ $(\sqrt{58}, \tan^{-1}(\frac{7}{3}))$

(d) Convert the following points to rectangular/Cartesian coordinates:

$$(3, \pi/4), \quad (5, -\pi/6), \quad (-5, \pi/6), \quad (2, 0), \quad (2, 3).$$

$\left(\frac{3}{\sqrt{2}}, \frac{3}{\sqrt{2}}\right)$ $\quad$ $\left(\frac{5\sqrt{3}}{2}, \frac{-5}{2}\right)$ $\quad$ $\left(\frac{-5\sqrt{3}}{2}, \frac{-5}{2}\right)$ $\quad$ $(2, 0)$ $\quad$ $(2\cos(3), 2\sin(3))$