

key for 10.3.

4a. $(2, 2\pi/3)$

$$x = r \cos \theta = 2 \cos(2\pi/3) = -1$$

$$y = r \sin \theta = 2 \sin(2\pi/3) = \sqrt{3}$$

b. $(4, 3\pi)$

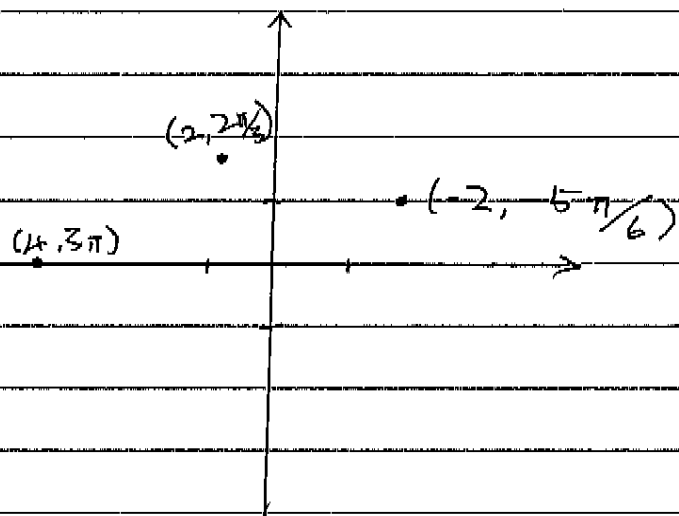
$$x = r \cos \theta = 4 \cos(3\pi) = -4$$

$$y = r \sin \theta = 4 \sin(3\pi) = 0$$

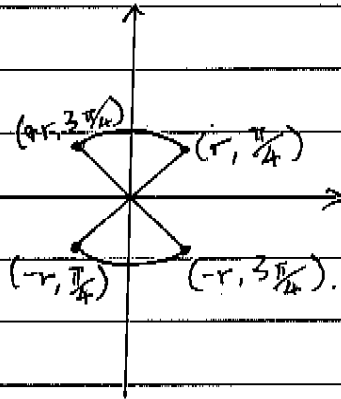
c. $(-2, -5\pi/6)$

$$x = -2 \cos(-5\pi/6) = \sqrt{3}$$

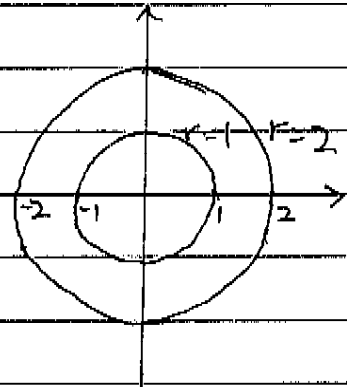
$$y = -2 \sin(-5\pi/6) = 1$$



12. $-1 \leq r \leq 1, \frac{\pi}{4} \leq \theta \leq 3\frac{\pi}{4}$



30. $r^2 - 3r + 2 = 0$
 $(r-2)(r-1) = 0$
 $r = 2$ or $r = 1$



40. $r = \sin 5\theta$

θ	r
$0 - \frac{\pi}{10}$	$0 - 1$
$\frac{\pi}{10} - \frac{\pi}{5}$	$1 - 0$
$\frac{\pi}{5} - \frac{3\pi}{10}$	$0 - 1$
$\frac{3\pi}{10} - \frac{4\pi}{10}$	$1 - 0$
$\frac{4\pi}{10} - \frac{5\pi}{10}$	$0 - 1$
$\frac{5\pi}{10} - \frac{6\pi}{10}$	$1 - 0$
$\frac{6\pi}{10} - \frac{7\pi}{10}$	$0 - 1$
$\frac{7\pi}{10} - \frac{8\pi}{10}$	$1 - 0$
$\frac{8\pi}{10} - \frac{9\pi}{10}$	$0 - 1$
$\frac{9\pi}{10} - \pi$	$0 - 1$

4.0 $r = \sin 5\theta$

θ	r
$0 - \frac{\pi}{10}$	$0 - 1$
$\frac{\pi}{10} - \frac{2\pi}{10}$	$1 - 0$
$\frac{2\pi}{10} - \frac{3\pi}{10}$	$0 - 1$
$\frac{3\pi}{10} - \frac{4\pi}{10}$	$1 - 0$
$\frac{4\pi}{10} - \frac{5\pi}{10}$	$0 - 1$
$\frac{5\pi}{10} - \frac{6\pi}{10}$	$1 - 0$
$\frac{6\pi}{10} - \frac{7\pi}{10}$	$0 - 1$
$\frac{7\pi}{10} - \frac{8\pi}{10}$	$1 - 0$
$\frac{8\pi}{10} - \frac{9\pi}{10}$	$0 - 1$
$\frac{9\pi}{10} - \pi$	$1 - 0$

