

1. Label each of the points with three different coordinate pairs. Make sure that no more than two of your points share any one coordinate.

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- 2. Using the graph above plot the polar coordinate pairs: $D(-2, 3\pi/4)$, $E(0, 99\pi/100)$, $F(3, -31\pi/6)$.
- 3. Convert the following coordinate pairs between coordinate systems.
 - (a) From polar to rectangular.

i. $(1, \pi/2)$

ii. $(-5, -\pi/4)$

iii. $(10, \pi/6)$

(b) From rectangular to polar. Use (r, θ) form with $r \ge 0$ and $0 \le \theta < 2\pi$.

i. (8,8)

ii. $(-4, 4\sqrt{3})$

iii. $(\frac{-3}{2}, \frac{-3\sqrt{3}}{2})$

- 4. Convert the following equations between coordinate systems.
 - (a) From polar to rectangular. In this case identify/describe the graph.

i. $r^2 = 10r\cos\theta$

ii. $r = 4 \tan \theta \sec \theta$ iii. $2 \cos \theta \sin \theta = \frac{1}{r^2} - 1$

(b) From rectangular to polar.

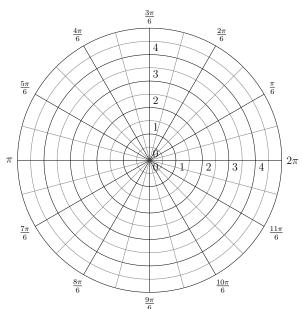
i.
$$2xy = 5$$

ii.
$$(x-2)^2 + (y-3)^2 = 16$$
 iii. $y = x+3$

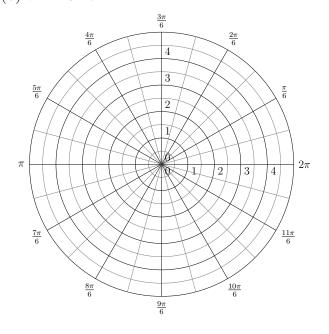
iii.
$$y = x + 3$$

5. Graph the following polar equations on the graphs given. Be sure to use symmetries to help.

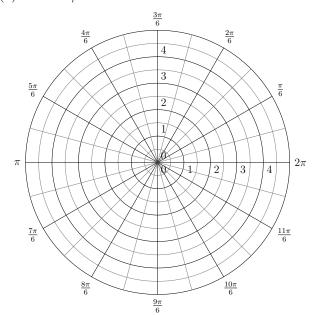
(a)
$$r = 4$$
 for $0 \le \theta \le 7\pi/6$



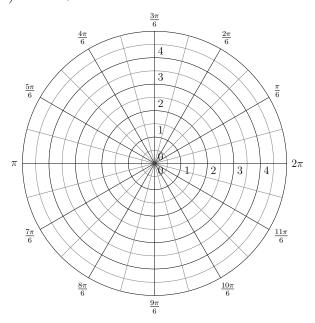
(b)
$$r = 4\sin\theta$$



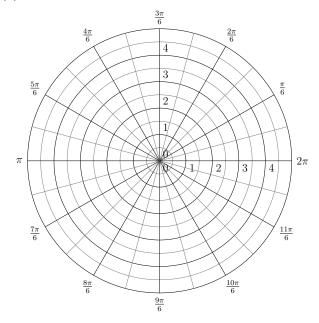
(c) $\theta = 5\pi/3$



(d) $r = 1 + 2\cos\theta$



(e) $r = 2 - 2\cos\theta$



(f) $r = 3\cos(2\theta)$

