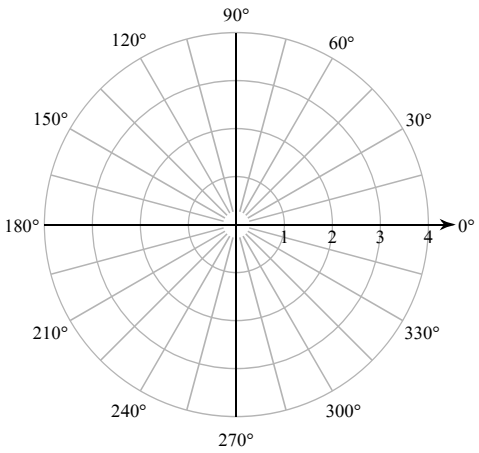
 Name_____

Polar Coordinates

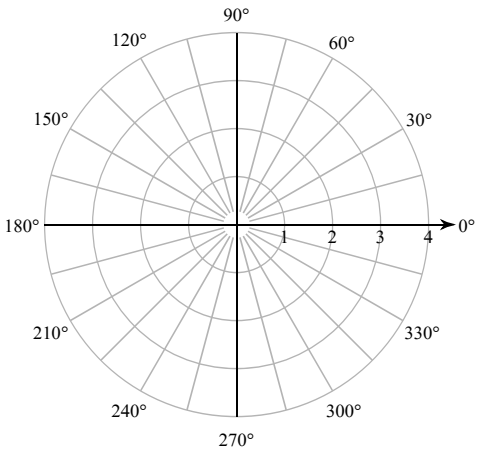
Date_____ Period____

Plot the point with the given polar coordinates.

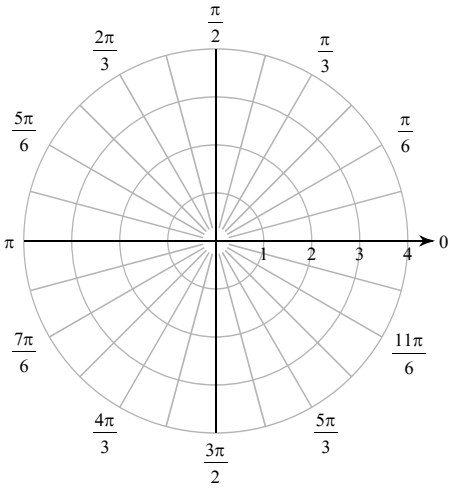
1) (051 ,3°)



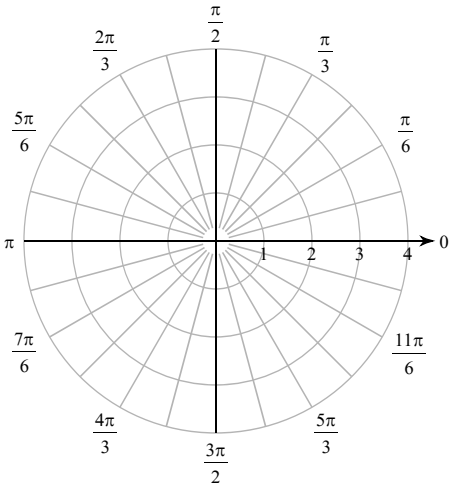
2) (2, –255°)



3) $\left(3, \frac{11\pi}{6}\right)$



4) $\left(-3, \frac{23\pi}{12}\right)$



Find all pairs of polar coordinates that describe the same point as the provided polar coordinates.

5) $(4, 90°)$

6) $\left(2, \frac{11\pi}{12}\right)$

Convert each pair of polar coordinates to rectangular coordinates.

7) $\left(2, \frac{3\pi}{2}\right)$

8) $\left(1, \frac{5\pi}{6}\right)$

Convert each pair of rectangular coordinates to polar coordinates where $r > 0$ and $0 \le \theta < 2\pi$.

9) $\left(\frac{3\sqrt{3}}{2}, \frac{3}{2}\right)$

10) $\left(-\sqrt{2}, \sqrt{2}\right)$

Two points are specified using polar coordinates. Find the distance between the points.

11) $\left(2, \frac{\pi}{3}\right), \left(2, \frac{11\pi}{6}\right)$

12) $\left(4, \frac{7\pi}{12}\right), \left(2, \frac{\pi}{12}\right)$

Critical thinking question:

13) An air traffic controller's radar display uses polar coordinates. A passing plane is detected at 285° counter-clockwise from north at a distance of 3 miles from the radar. Thirty seconds later the plane is detected at 225° and 2 miles. Estimate the plane's speed in miles per hour.

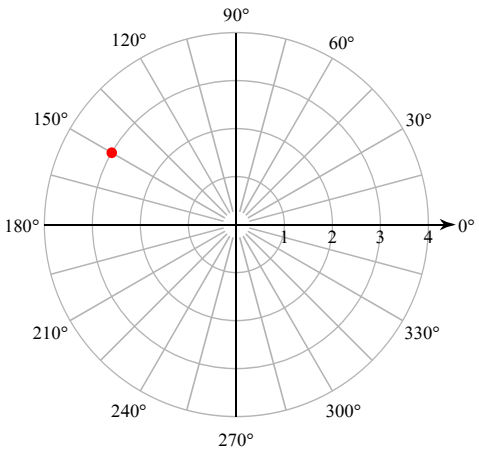
 Name_____

Polar Coordinates

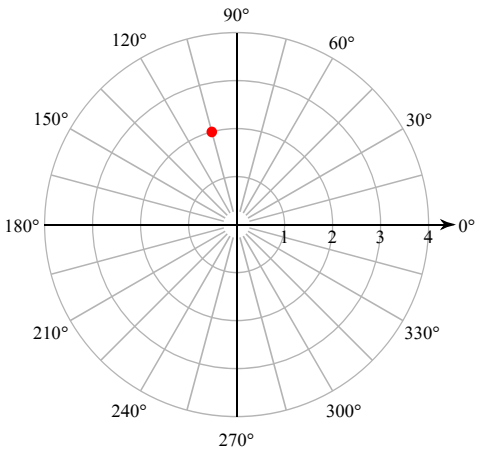
Date_____ Period____

Plot the point with the given polar coordinates.

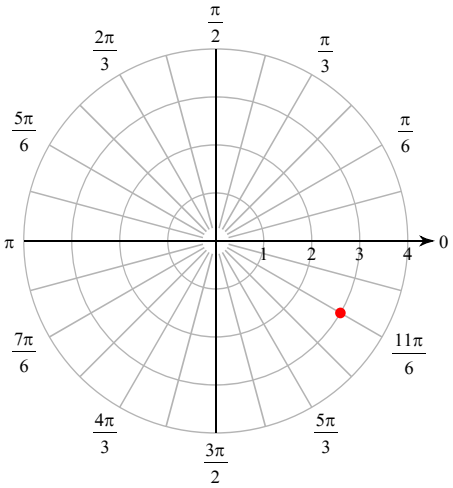
1) (051 ,3°)



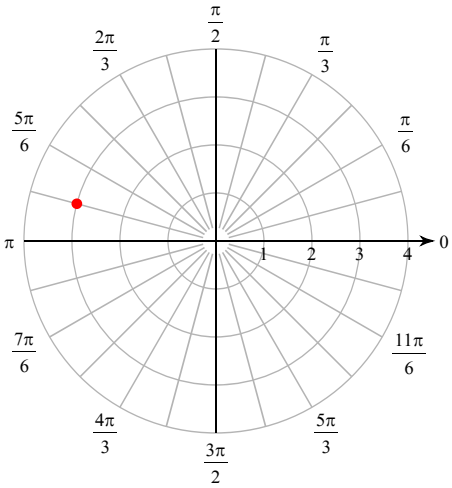
2) (2, −255°)



3) $\left(3, \frac{11\pi}{6}\right)$



4) $\left(-3, \frac{23\pi}{12}\right)$



Find all pairs of polar coordinates that describe the same point as the provided polar coordinates.

5) $(4, 90°)$

$(4, 90° + 360n°)$ and $(-4, 270° + 360n°)$ where n is an integer

6) $\left(2, \frac{11\pi}{12}\right)$

$\left(2, \frac{11\pi}{12} + 2n\pi\right)$ and $\left(-2, \frac{11\pi}{12} + (2n+1)\pi\right)$ where n is an integer

Convert each pair of polar coordinates to rectangular coordinates.

7) $\left(2, \frac{3\pi}{2}\right)$

$(0, -2)$

8) $\left(1, \frac{5\pi}{6}\right)$

$\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

Convert each pair of rectangular coordinates to polar coordinates where $r > 0$ and $0 \le \theta < 2\pi$.

9) $\left(\frac{3\sqrt{3}}{2}, \frac{3}{2}\right)$

$\left(3, \frac{\pi}{6}\right)$

10) $(-\sqrt{2}, \sqrt{2})$

$\left(2, \frac{3\pi}{4}\right)$

Two points are specified using polar coordinates. Find the distance between the points.

11) $\left(2, \frac{\pi}{3}\right), \left(2, \frac{11\pi}{6}\right)$

$2\sqrt{2} \approx 2.828$

12) $\left(4, \frac{7\pi}{12}\right), \left(2, \frac{\pi}{12}\right)$

$2\sqrt{5} \approx 4.472$

Critical thinking question:

13) An air traffic controller's radar display uses polar coordinates. A passing plane is detected at 285° counter-clockwise from north at a distance of 3 miles from the radar. Thirty seconds later the plane is detected at 225° and 2 miles. Estimate the plane's speed in miles per hour.

Assuming a straight path, no acceleration, no change in altitude, and no curviture of the earth. $120\sqrt{7} \approx 317.49$mph