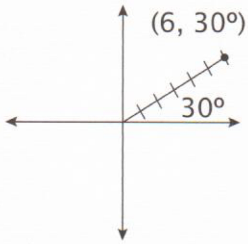
Then move along that side six units.



Practice Problems 1

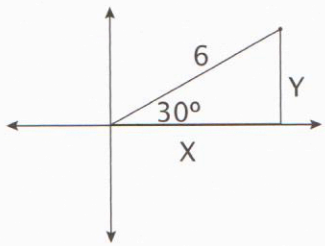
1. Plot the polar coordinates (5, 225º).

2. Plot the polar coordinates (3, 120º).

3. Plot the polar coordinates (4, –45º).

Example 1 (continued)

Let's pick up again with example 1. Notice that we could employ the sine and cosine functions to determine the x and y coordinates of the point that has the polar coordinate (6, 30°).



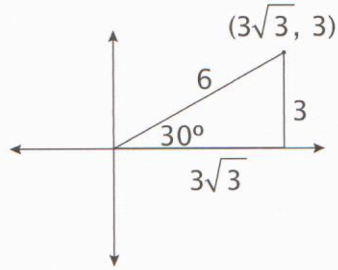
$\sin 30° = \frac{y}{6}$

$6(\sin 30°) = y$

$3 = y$

$\cos 30° = \frac{x}{6}$

$3\sqrt{3} = x$



There are two ways to describe the same set of coordinates:
polar (6,30°) and rectangular ($3\sqrt{3}$, 3).

In polar terminology, the distance is represented as r and the angle measure, or direction, as θ. Rectangular coordinates are (x, y) and polar coordinates are (r, θ).

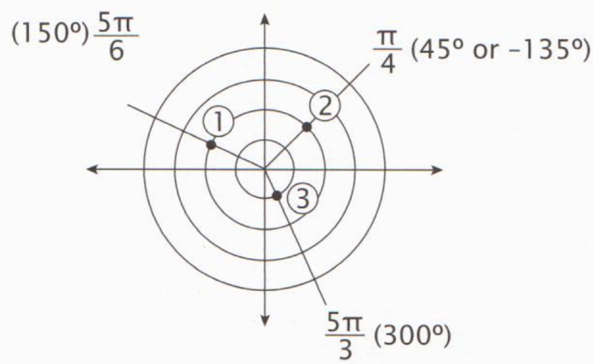
Practice Problems 2

1. Give the rectangular coordinates for the polar coordinates (5, 225°).
2. Give the rectangular coordinates for the polar coordinates (3, 120°).
3. Give the rectangular coordinates for the polar coordinates (4, –45°).

Example 5

Plot these polar coordinates.

1. $(2, 150°)$ 2. $(-2, -3\pi/4)$ 3. $(1, 300°)$



Practice Problems 3

Plot these polar coordinates and give at least three more ways of describing them, employing degrees and radian measure.

1. $(3, 30°)$
2. $(-1, 60°)$
3. $(4, -\pi/4)$
4. $(-2, -2\pi/3)$

Change the polar coordinates to rectangular coordinates.

5. $(2, \pi/6)$
6. $(3, -\pi/4)$
7. $(\sqrt{2}, 60°)$
8. $(-4, 315°)$

Do the reverse of #5-8. Change the rectangular coordinates to polar coordinates.

9. $(4, -4)$
10. $(1, \sqrt{3})$
11. $(-2\sqrt{3}, 2)$
12. $(-3\sqrt{2}, -\sqrt{6})$