EXAMPLE 5   Converting from Polar Form to Rectangular Form

Convert $r = 4 \sec \theta$ to rectangular form and identify the graph. Support your answer with a polar graphing utility.

EXAMPLE 6 Converting from Rectangular Form to Polar Form

Convert $(x - 3)^2 + (y - 2)^2 = 13$ to polar form.

Finding Distance Using Polar Coordinates

A radar tracking system sends out high-frequency radio waves and receives their reflection from an object. The distance and direction of the object from the radar is often given in polar coordinates.

EXAMPLE 7   Using a Radar Tracking System

Radar detects two airplanes at the same altitude. Their polar coordinates are (8 mi, 110°) and (5 mi, 15°). (See Figure 6.44.) How far apart are the airplanes?