Polar And Rectangular Coordinate Conversion

The whole purpose of superimposing the **Cartesian Coordinate System (xy-plane aka the Rectangular Coordinate System)** over the **Polar Coordinate System** is so that we can describe curves with less sophisticated Algebra! We will see this shortly, but for now we want to be able to convert points between the two systems to eventually convert curves between the two systems.



Using right triangle properties we can obtain the following conversion formulas.



Convert the following polar coordinates (r, θ) to rectangular coordiantes (x, y) and plot the location.

















Convert the following rectangular coordinates (x, y) to polar coordinates (r, θ) and plot the location for $0 \le \theta \le 2\pi$.















