

## Vector Conversions on the TI-83 Calculator

The following instructions explain the key-by-key keystrokes necessary to convert a vector in Rectangular form to a vector in Polar form.

Before you begin, adjust the angular **MODE** of your calculator. If you want input or output in degrees, set the calculator to **DEGREE**; if you want radians, set the calculator to **RADIAN**.

### Rectangular to Polar Conversion

1. Press 2<sup>nd</sup> **ANGLE**
2. Use the down arrow to select **R►Pr(**: press **ENTER** to put it on the main screen.
3. Enter the rectangular components (x,y) of the vector: 1,3 for our example here.
4. Press **)**

On the main screen you will see

**R►Pr(1,3)**

5. Press **ENTER** to get the radial component of your vector: **3.16227766**
6. Press 2<sup>nd</sup> **ANGLE**
7. Use the down arrow to select **R►Pθ(**: press **ENTER** to put it on the main screen.
8. Enter the rectangular components (x,y) of the vector: 1,3 for our example here.
9. Press **)**

On the main screen you will see

**R►Pθ(1,3)**

10. Press **ENTER** to get the radial component of your vector: **71.56505118**
11. The vector can now be written in polar form.

**3.162277660 ∠ 1.24904577** *(If you are in radians mode)*

or

**3.16227766 ∠ 71.565051177°** *(If you are in degrees mode)*

## Vector Conversions on the TI-83 Calculator

The following instructions explain the key-by-key keystrokes necessary to convert a vector in Polar form to a vector in Rectangular form.

Before you begin, adjust the angular **MODE** of your calculator. If you want input or output in degrees, set the calculator to **DEGREE**; if you want radians, set the calculator to **RADIAN**.

### Polar to Rectangular Conversion

*(Be sure you are in **DEGREE** mode for this example.)*

1. Press 2<sup>nd</sup> **ANGLE**
2. Use the down arrow to select **P►Rx**(: press **ENTER** to put it on the main screen.
3. Enter the polar components (R,θ) of the vector: **3.16227766, 71.56505118** for our example here.
4. Press **)**

On the main screen you will see

**P►Rx(3.16227766, 71.56505118)**

5. Press **ENTER** to get the x component of your vector: **1.00000001**
6. Press 2<sup>nd</sup> **ANGLE**
7. Use the down arrow to select **P►Ry**(: press **ENTER** to put it on the main screen.
8. Enter the polar components (R,θ) of the vector: **3.16227766, 71.56505118** for our example here.
9. Press **)**

On the main screen you will see

**P►Ry(3.16227766, 71.56505118)**

10. Press **ENTER** to get the y component of your vector: **3.00000000**
11. The vector can now be written in rectangular form.

$$3.16227766 \angle 71.565051177^\circ = (1, 3) = 1i + 3j$$