

## Vector Addition on the TI-86 Calculator

The following instructions explain the key-by-key keystrokes necessary to add two vectors.

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**.

### Adding vectors in Polar Form

*(Be sure to check the angle mode of your calculator before you begin.)*

1. Press  $2^{\text{nd}}$  **VECTR**, then press **F4** (OPS).
2. In this example we will add two polar-form vectors:  $[13\angle 120^\circ]$  and  $[21\angle -45^\circ]$
3. Press

$$2^{\text{nd}} [ \quad 13 \quad 2^{\text{nd}}, \quad 120 \quad 2^{\text{nd}} ] + 2^{\text{nd}} [ \quad 21 \quad 2^{\text{nd}}, \quad -45 \quad 2^{\text{nd}} ]$$

4. On the main screen you will see

$$[13\angle 120] + [21\angle -45]$$

5. Press **ENTER** to get the answer in rectangular form.

$$[8.349242 \quad -3.5909121] \quad \text{(If you are in degrees mode)}$$

6. To convert the answer back to polar form, use the **VECTR** menu activated earlier.

Press **F3** (**► Pol**)

7. On the screen you will see

**ANS ► Pol**

8. Press **ENTER** to get your answer in polar form.

$$[9.088702\angle -23.27197] \quad \text{(If you are in degrees mode)}$$

*If you want to keep your calculator in **RADIAN** mode, you may still enter angles in degrees by including the degree symbol ( $^\circ$ ) in the vector definition; To enter the degree symbol use the following menu;*

$2^{\text{nd}}$  MATH F3 F1 (you can leave the menu showing and just hit F1 whenever you need degrees.)

In **RADIAN** mode, the answers always come out in radians. Convert radians to degrees by hand when necessary.

## Vector Addition on the TI-86 Calculator

The following instructions explain the key-by-key keystrokes necessary to add two vectors.

### Adding vectors in Rectangular Form

1. In this example we will add two rectangular-form vectors: [19, -3] and [-8, 16]
2. Press

$$2^{\text{nd}} [ \quad 19 \quad , \quad -3 \quad 2^{\text{nd}} ] + 2^{\text{nd}} [ \quad -8 \quad , \quad 16 \quad ]$$

3. On the main screen you will see

$$[19, -3] + [-8, 16]$$

4. Press **ENTER** to get the answer in rectangular form.

$$[11 \ 13]$$

5. Before you continue, adjust the angular **MODE** of your calculator. If you want output in degrees, set the calculator to **DEGREE**; if you want radians, set the calculator to **RADIAN**.
6. To convert the answer to polar form, use the VECTR menu.

Press  $2^{\text{nd}}$  **VECTR**, then press **F4** (OPS).

7. Press **F3** (► Pol)

8. On the screen you will see

**ANS► Pol**

9. Press **ENTER** to get your answer.

**[17.029386∠ 49.763642]** *(If you are in degrees mode)*

or

**[17.029386∠ .868539]** *(If you are in radians mode)*