Chapter 10 / **Example 3**

Cartesian and polar form

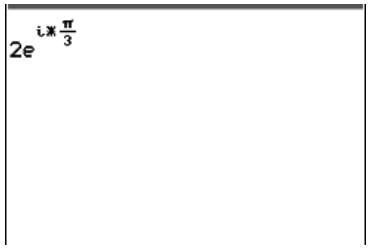
Write the following complex numbers in Cartesian form. Check your answer by using technology.

a $2\text{cis}\frac{\pi}{3}$ **b** $5e^{i\frac{3\pi}{4}}$ **c** $8\text{cis}\frac{11\pi}{6}$ **d** $e^{i\frac{17\pi}{12}}$

On the TI-84 Plus C complex numbers cannot be entered in polar form, just in Euler's form, therefore you should rewrite $2\text{cis}\frac{\pi}{3}$ as $2e^{i\times\frac{\pi}{3}}$.

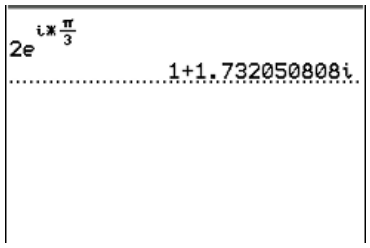
Type $2e^{i\frac{\pi}{3}}$ using [2nd] [ln] [e^x] and press [enter].

Use the fraction template by pressing [ALPHA] [f1] 1:n/d.



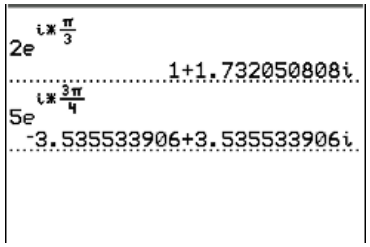
Since the default format of complex numbers is Cartesian, the GDC converts from polar to Cartesian without needing to enter any additional command.

$2\text{cis}\frac{\pi}{3} = 1 + 1.73\text{i}$.



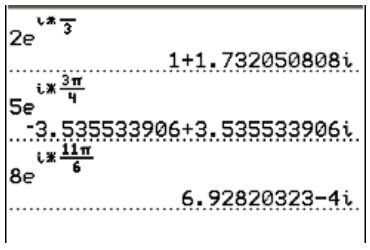
Type $5e^{i\times\frac{3\pi}{4}}$ and press [enter].

$5e^{i\frac{3\pi}{4}} = -3.54 + 3.54\text{i}$.



Type $8e^{i\times\frac{11\pi}{6}}$ and press [enter].

$8e^{i\times\frac{11\pi}{6}} = 6.93 - 4\text{i}$.



Chapter 10 / **Example 3**

Cartesian and polar form

Type $e^{i\times\frac{17\pi}{12}}$ and press enter.

$e^{i\frac{17\pi}{12}} = -0.259 - 0.966i$.