

Chapter 3 / **Example 12**

Modulus of complex numbers

Find the modulus of the following complex numbers.

a $5 - 12i$ **b** $\frac{1}{2} - \frac{1}{4}i$ **c** $\frac{20i - 21}{29}$

Open a new document and add a Calculator page.

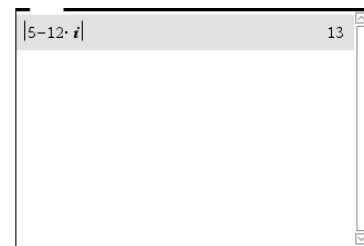
To enter the modulus function press $\boxed{2nd}$ and select $\boxed{|a|}$ with the trackpad.

Type $5 - 12i$.

To enter i press $\boxed{2nd}$ and select i from the menu.

Press \boxed{enter} .

$$|5 - 12i| = 13$$



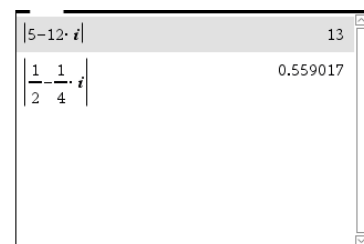
Enter the modulus function by pressing $\boxed{2nd}$ and select $\boxed{|a|}$ with the trackpad.

Type $\frac{1}{2} - \frac{1}{4}i$ using the fraction template, \boxed{ctrl} $\boxed{\frac{\Box}{\Box}}$ to enter the fractions.

To enter i press $\boxed{2nd}$ and select i from the menu.

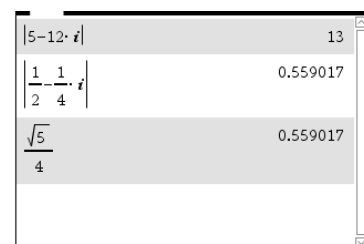
Press \boxed{enter} .

$$\frac{1}{2} - \frac{1}{4}i = 0.559$$



Compare this value by entering $\frac{\sqrt{5}}{4}$ using the fraction template, \boxed{ctrl} $\boxed{\frac{\Box}{\Box}}$ to enter the fraction and evaluating.

The values are the same (to the number of digits displayed).



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Enter the modulus function by pressing $\boxed{\frac{1}{x}}$ and select $\boxed{|\cdot|}$ with the trackpad.

Type $\frac{20i-21}{29}$ using the fraction template, $\boxed{\text{ctrl}}$ $\boxed{\frac{1}{x}}$ to enter the fraction.

Press $\boxed{\text{enter}}$.

$$\frac{20i-21}{29} = 1$$

$\left \frac{1}{2} - \frac{1}{4}i \right $	0.559017
$\frac{\sqrt{5}}{4}$	0.559017
$\left \frac{20i-21}{29} \right $	1