

Chapter 3 / **Example 17****Operations with complex numbers**

Storing values of complex numbers for ease of calculation.

Given the complex numbers $z_1 = 2 + i$, $z_2 = 2 - 5i$ and $z_3 = -1 + 2i$, find the following.

a $\frac{z_1}{z_2} - 3z_3$

b $\frac{z_1^2}{z_2 \cdot z_3}$

c $\frac{2z_1 - 3z_2}{z_1 \cdot z_3}$

Check your answers on your GDC.

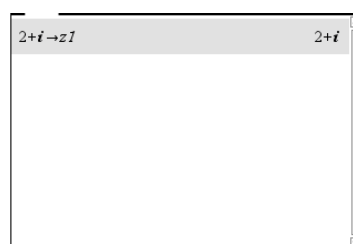
Open a new document and add a Calculator page.

To store a value press **ctrl** **var** (**sto→**).

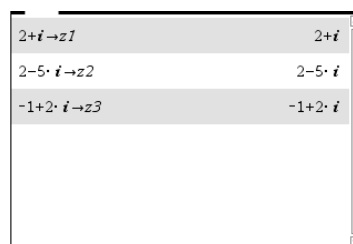
Type $2 + i$ and store it as z_1 .

To enter i press **π** and select **i** from the menu.

Press **enter**.

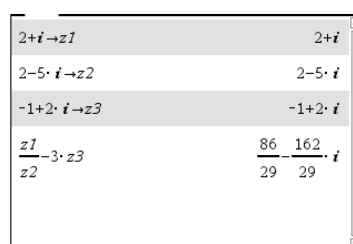


In the same way, store $2 - 5i$ as z_2 and $-1 + 2i$ as z_3 .



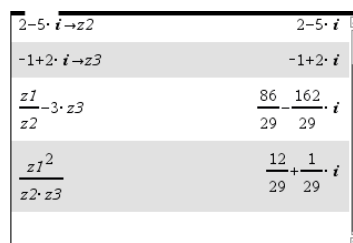
To calculate $\frac{z_1}{z_2} - 3z_3$ type $z1 \div z2 - 3 \times z3$ and press **enter**.

$$\frac{z_1}{z_2} - 3z_3 = \frac{86}{29} - \frac{162}{29}i$$



To calculate $\frac{z_1^2}{z_2 \cdot z_3}$ type $z1^2 \div (z2 \times z3)$ and press **enter**.

$$\frac{z_1^2}{z_2 \cdot z_3} = \frac{12}{29} + \frac{1}{29}i$$



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To calculate $\frac{2z_1 - 3z_2}{z_1 \cdot z_3}$ type $(2 \times z1 - 3 \times z2) \div (z1 \times z3)$ and press

enter.

$$\frac{2z_1 - 3z_2}{z_1 \cdot z_3} = \frac{59}{25} - \frac{62}{25}i$$

$\frac{z1}{z2} - 3 \cdot z3$	$\frac{86}{29} - \frac{162}{29}i$
$\frac{z1^2}{z2 \cdot z3}$	$\frac{12}{29} + \frac{1}{29}i$
$\frac{2 \cdot z1 - 3 \cdot z2}{z1 \cdot z3}$	$\frac{59}{25} - \frac{62}{25}i$