Nombor Kompleks

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Standard Pembelajaran

1.1.1 Melakukan operasi melibatkan kompleks.
1.1.2 Menentukan modulus dan argumen bagi suatu nombor kompleks $x + y\,\mathbf{i}$.

Boost your Curiosity

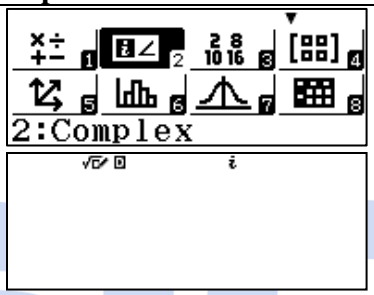
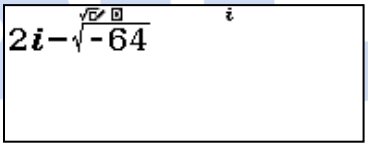
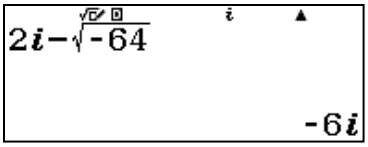
CASIO

Nombor Kompleks

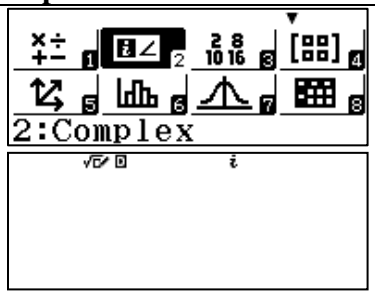
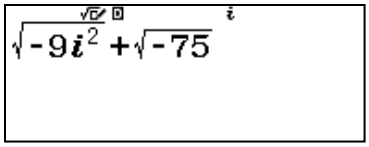
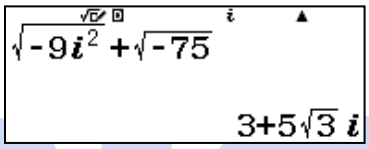
1. Ungkapkan setiap yang berikut dalam bentuk $a + b\mathbf{i}$.
   a) $2\boldsymbol{i} - \sqrt{-64}$
   b) $\sqrt{-9\boldsymbol{i}^2} + \sqrt{-75}$
   c) $-\left(\sqrt{-3}\right)^2 + \boldsymbol{i}^4$

Penyelesaian:

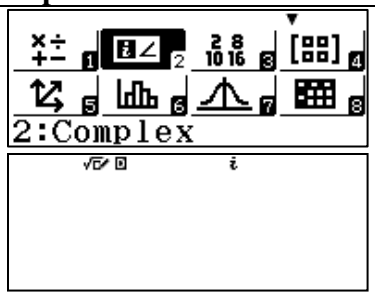
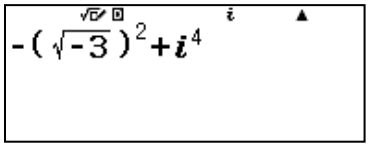
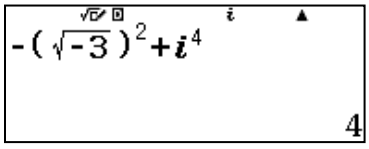
a) $2\boldsymbol{i} - \sqrt{-64}$

Arahan	Paparan Skrin Kalkulator
MENU 2	
Masukkan operasi. 2 ENG − √■ (−) 6 4	
Dapatkan jawapan. =	

b) $\sqrt{-9i^2} + \sqrt{-75}$

Arahan	Paparan Skrin Kalkulator
MENU 2	
Masukkan operasi. √■ (−) 9 ENG x^2 ▶ + √■ (−) 7 5	
Dapatkan jawapan. =	

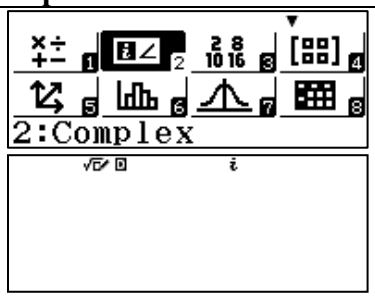
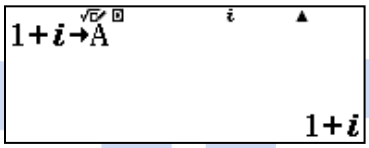
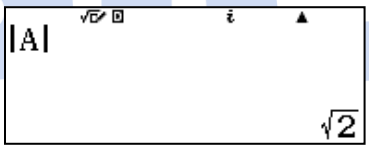
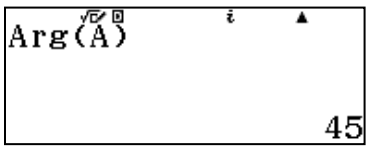
c) $-\left(\sqrt{-3}\right)^2 + i^4$

Arahan	Paparan Skrin Kalkulator
MENU 2	
Masukkan operasi. (−) (√■ (−) 3 ▶) x^2 + ENG $x^■$ 4	
Dapatkan jawapan. =	

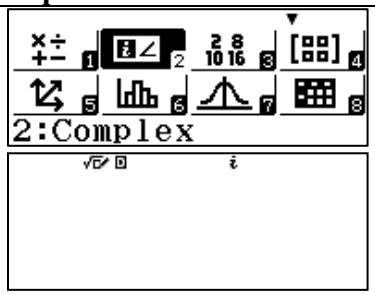
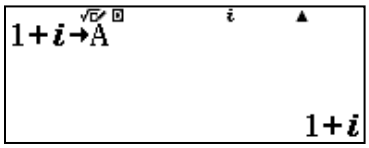
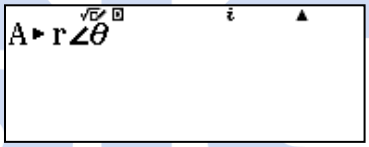
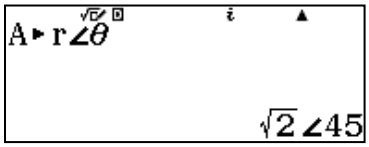
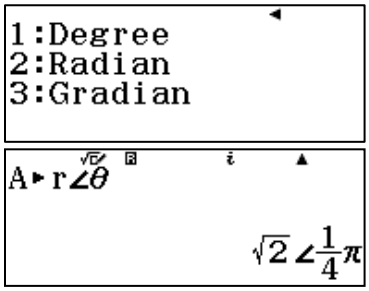
2. Suatu nombor kompleks diberi dengan $z = 1 + \boldsymbol{i}$.
   a) Cari modulus dan argumen bagi z dalam bentuk Cartesian.
   b) Ungkapkan nombor kompleks z dalam bentuk polar.

Penyelesaian:

a) Cara 1:

Arahan	Paparan Skrin Kalkulator
MENU 2	
Masukkan nombor kompleks dan andaikan sebagai **A**. 1 + ENG STO (−)	
Dapatkan modulus. SHIFT (ALPHA (−) = Maka, modulus = $\sqrt{2}$	
Dapatkan argumen. OPTN 1 ALPHA (−)) = Maka, argumen = 45°	

Cara 2:

Arahan	Paparan Skrin Kalkulator
MENU 2	
Masukkan nombor kompleks dan andaikan sebagai **A**. 1 + ENG STO (−)	
ALPHA (−) OPTN ▼ 1	
Dapatkan modulus dan argumen (dalam unit darjah). =	
Dapatkan modulus dan argumen (dalam unit radian). SHIFT MENU 2 2 =	

b) $x + y\mathbf{i} = r(\cos\theta + \mathbf{i}\sin\theta)$

$= \sqrt{2}(\cos 45° + \mathbf{i}\sin 45°) \,/\, \sqrt{2}\left(\cos\frac{\pi}{4} + \mathbf{i}\sin\frac{\pi}{4}\right)$