MATLAB: University of California, Davis

Computer LAB for Linear Algebra Dr. Daddel

MATH 22AL LAB # 10

8 Sum, Difference and Product of Complex Numbers

If $c_1 = a_1 + ib_1$ and $c_2 = a_2 + ib_2$ then the **sum** of c_1 and c_2 is

$$c_1 + c_2 = (a_1 + a_2) + i(b_1 + b_2)$$

and their **difference** is

$$c_1 - c_2 = (a_1 - a_2) + i(b_1 - b_2)$$

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The **product** of $c_1 = a_1 + ib_1$ and $c_2 = a_2 + ib_2$ in Rectangular coordinates is given by

$$c_1c_2 = (a_1 + ib_1)(a_2 + ib_2) = (a_1a_2 - b_1b_2) + i(a_1b_2 + a_2b_1)$$

The **product** of $c_1 = r_1(\cos\theta_1 + i\sin\theta)$ and $c_2 = r_2(\cos\theta_2 + i\sin\theta_2)$ in Polar coordinates is given by

$$c_1c_2 = r_1r_2[\cos(\theta_1 + \theta_2) + i\sin(\theta_1 + \theta_2)]$$

type	$c10 = -1 - i$	
type	$c11 = 7 + 2i$	
type	$c12 = 3 - i$	

type	$z_1 = c10 + c11$	
type	$z_2 = c10 - c11$	
type	$z_3 = c10 * c11$	

type	`imag(c11)`	
type	`real(c11)`	

Exercise 3: Let $c16 = 3cis(0.7)$ and $c17 = 2cis(1.2)$ (recall that the angels are in radians) :

a.) Find a complex number $z16 = rcis(\theta)$ such that $(z16)(c16) = 1cis(0)$

b.) Find a complex number $z17 = rcis(\theta)$ such that $(z17)(c17) = 1cis(0)$

c.) Find a complex number $z18 = rcis(\theta)$ such that $(z18)(rcis(\theta) = 1cis(0)$