

Complex Numbers Task Sheet

October 13, 2014

1. Open up the Complex Number applet. You can either find the link on my website under "Technology Enhanced Activity Plan" or enter: <http://www.maa.org/publications/periodicals/loci/resources/an-interactive-introduction-to-complex-numbers-basic-calculations-applet>

2. Plot the following points and then fill in the complex number portion. (enter the numbers then click set z1 coordinate)

Cartesian Coordinate: a_1 3 b_1 2 Complex Number: _____ + _____ i (Look in the top left corner)

Cartesian Coordinate: a_2 -3 b_2 2 Complex Number: _____ + _____ i (Look in the top right corner)

OBSERVE THAT $z_1 = a_1 + b_1i$ AND $z_2 = a_2 + b_2i$.

What is $z_1 + z_2$? _____ + _____ i (Click the box in the lower left corner that says " $z_1 + z_2$ ")

What is $z_1 - z_2$? _____ + _____ i (Click the box in the lower left corner that says " $z_1 - z_2$ ")

3. Find another pair of Cartesian Coordinates and fill in the complex number equivalent:

Cartesian Coordinate: a_1 _____ + b_1 _____ i Complex Number: _____ + _____ i

Cartesian Coordinate: a_2 _____ + b_2 _____ i Complex Number: _____ + _____ i

What is $z_1 + z_2$? _____ + _____ i

What is $z_1 - z_2$? _____ + _____ i

4. Use the applet to graph a pair of Cartesian Coordinates that satisfy the given equations.

If $z_1 + z_2 = 0$, then what does that say about z_1 and z_2 ? What does that say about $z_1 - z_2$? (Look in the bottom left corner)

If $z_1 - z_2 = 0$, then what does that say about z_1 and z_2 ? What does that say about $z_1 + z_2$?

5. Formulate a conjecture for how to add and subtract complex numbers. Be ready to discuss your conjecture with the class.

6. Write down the conjecture decided by the class.