

Algebra 2

Monday 10-1-12

Class Notes

Ch. 2-9 Operations With Complex Numbers.

- Graph $a+bi$ NOT x-y plane!!

- Abs. Value $|a+bi| = \sqrt{a^2+b^2}$

- +, -

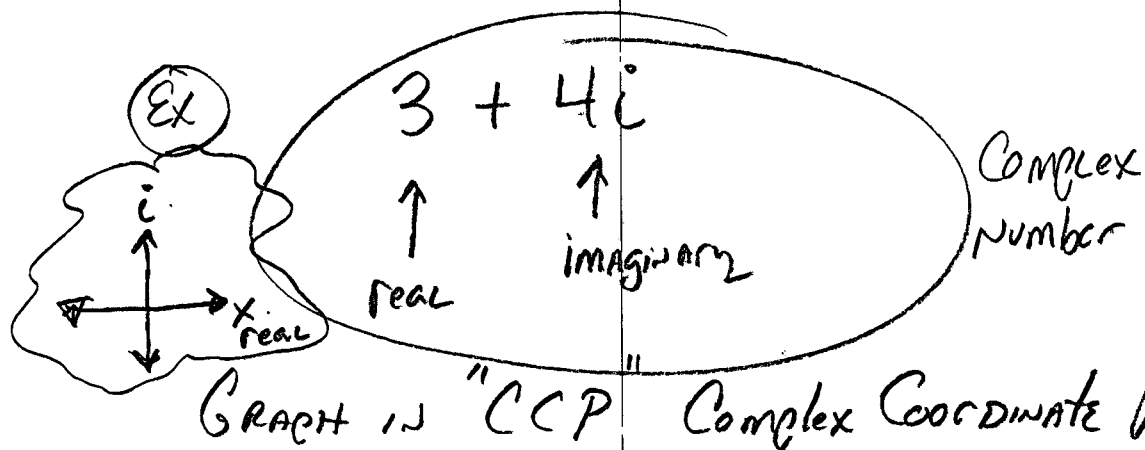
- Mult.

- Powers of i

	<u>Rem.</u>
$i^1 = i$	1
$i^2 = -1$	2
$i^3 = -i$	3
$i^4 = 1$	0

- Dividing

Complex Conjugates $a+bi$ and $a-bi$



$$(-2 + 4i) + (3 - 11i)$$

$$\boxed{1 - 7i}$$

$$(4 - i) - (5 + 8i)$$

$$\boxed{-1 - 9i}$$

$(a + bi)$ and $(a - bi)$
complex conjugates

$$\textcircled{\text{EX}} \quad -3i^{12} = \boxed{-3}$$

$$\textcircled{\text{EX}} \quad i^{25} = \boxed{i}$$

$$\begin{aligned} \textcircled{\text{EX}} \quad \frac{13+7i}{8i} \cdot \frac{8i}{8i} &= \frac{24i+56i^2}{-64} \\ &= \frac{-56+24i}{-64} \\ &= \frac{56-24i}{64} \\ &= \frac{28-12i}{32} \\ &= \frac{7-3i}{8} \\ &= \boxed{\frac{7}{8} - \frac{3}{8}i} \end{aligned}$$

$$\sqrt{-1} = i =$$

*	Rem.
$i^1 = i$	1
$i^2 = -1$	2
$i^3 = -i$	3
$i^4 = 1$	0

$i^{15} = -i$
 $i^{16} = 1$
 $i^{26} = -1$

$$i^5 = i$$

$$i^6 = -1$$

$$i^7 = -i$$

$$i^8 = 1$$

$$2i(3-5i)$$

$$6i - 10i^2$$

$$6i + 10 = 10 + 6i$$

$$(2i+4)(3i^2-1)$$

$$6i^3 - 2i + 12i^2 - 4$$

$$-6i - 2i - 12 - 4$$

$$-16 - 8i$$

$$\textcircled{ex} \quad \frac{5+i}{2-4i} \cdot \frac{2+4i}{2+4i}$$

$$= \frac{10 + 22i - 4}{4 + 16} = \frac{6 + 22i}{20}$$

$$= \frac{3 + 11i}{10}$$

$$= \boxed{\frac{3}{10} + \frac{11}{10}i} \quad \checkmark$$

$$(4i)^2 = -16$$

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