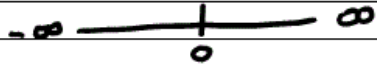


Name: _____ Page Number: 1
 Class: Math 1301 Date: 4-4-13
 Topic/Section: 3.3 - Complex numbers

Examples and Vocabulary	Notes/Comments/Questions
$0 + 5i = 5i$ $(\sqrt{-1})^2 = -1$ $(\sqrt{5})^2 = 5$ $(\sqrt{4})^2 = 4$ $\odot^2 = -1$ $\heartsuit^2 = -1$ $@^2 = -1$ $i^2 = -1$ $i = \sqrt{-1} = \odot, \heartsuit, @$ Real $2i$ Imaginary $5i$ $25i$ πi $e i, 0 = 0i$ $\sqrt{4}$ $= \sqrt{4(-1)}$ $= 2i$ $\sqrt{-25}$ $= \sqrt{25(-1)}$ $= 5i$	$a + bi$ Complex $3 + 2i$ $e - i$ $\pi + 25i$  Rational $\frac{22}{7}, 1.2, 0.333$ Integers $-10, 0, 3$ $-10 = -10 + 0i$ Natural $1, 2, 3$ $\sqrt{2}, \pi, e \sim 2.71828$

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Examples and Vocabulary	Notes/Comments/Questions
① Simplify. a. $1(-3+4i) + 1(5-i)$ $= -3+4i + 5-i$ $= 2+3i$ b. $1(8+2i) - 1(10-5i)$ $= 8+2i-10+5i$ $= -2+7i$ c. $(-3+4i)(5-i)$ $= -15+3i+20i-4i^2$ $= -15+23i-4(-1) = -15+23i+4 = -11+23i$ d. $(5-i)^2 = (5-i)(5-i)$ $= 25-5i-5i+i^2$ $= 25-10i-1 = 24-10i$	

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Examples and Vocabulary	Notes/Comments/Questions
② Solve. a. $\frac{1}{2}x^2 + 17 = 5x$ $\quad \quad \quad -5x \quad -5x$ $\frac{1}{2}x^2 - 5x + 17 = 0$ $x = \frac{-(-5) \pm \sqrt{(-5)^2 - 4(\frac{1}{2})(17)}}{2(\frac{1}{2})}$ $= \frac{5 \pm \sqrt{25 - 34}}{1} = 5 \pm \sqrt{-9} = 5 \pm 3i$ $= 5 \pm \sqrt{9(-1)}$ b. $x^2 + 3x + 5 = 0$ $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$ $= \frac{-3 \pm \sqrt{3^2 - 4(1)(5)}}{2(1)}$	$a = \frac{1}{2}$ $b = -5$ $c = 17$ $\checkmark \quad \checkmark$ $= 5 + 3i, 5 - 3i$ $a = 1$ $b = 3$ $c = 5$ $= \frac{-3 \pm \sqrt{9 - 20}}{2}$ $= \frac{-3 \pm \sqrt{-11}}{2} = \frac{-3 \pm i\sqrt{11}}{2}$