Section 2.4 Complex Numbers

Solve: $x^2 + 1 = 0$

$i = \sqrt{-1}$ $\qquad$ $i^2 = -1$

Simplify:

$\sqrt{-20}$ $\qquad$ $\sqrt{-5} \cdot \sqrt{-10}$ $\qquad$ $(\sqrt{-75})^2$ $\qquad$ $(\sqrt{-45} - \sqrt{-5})^2$

Complex number in standard form:

$$a + bi$$

real $\qquad$ imaginary

Conjugate of a complex number

$$a + bi \Rightarrow a - bi$$

opposite of the imaginary part

State the complex conjugate:

$3 + 2i$

7

$-4i$

$-5 - 3i$

Multiply each complex number by its complex conjugate.

a) $1 + i$ b) $4 - 3i$ c) $\sqrt{-7}$

Simplify:

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

$(5 - 3i) + (3 + 5i) - (8 + 2i)$

$-5(3 - 2i)$

$3(4 + 2i)^2$

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

Divide. Write in standard form.

$$\frac{2 + 3i}{4 - 2i}$$

$$\frac{2 + i}{2 - i}$$

$$\frac{9 - 4i}{i}$$

Solve:

$3x^2 - 2x + 5 = 0$

$8x^2 + 14x + 9 = 0$

Chapter 2.4

Pg. 150-151: #8, 9, 11-37 odd, 40, 48, 52, 59, 63, 69-72, 77, 85 86, 94