Name:_____

Complex Numbers

- Definition: $i = \sqrt{-1}$
  $i^2 = -1$

- Imaginary Number $\rightarrow a + bi$ where:

- Complex Number $\rightarrow a + bi$ where:

- Real Number $\rightarrow a + bi$ where:

  - Note: *a* and *b* are real numbers

Examples of complex numbers:

$5 + 7i$ $-7 - 3.6i$ $7i$ 16   0

Express in terms of *i*

$\sqrt{-36}$ $\sqrt{-13}$ $-\sqrt{-76} + \sqrt{-125}$

Perform the indicated operations (add and subtract) and simplify. Write each answer in the form $a + bi$.

$(-5 - i) - (-7 + 5i)$ $\left(-\sqrt{16} - \sqrt{-25}\right) + \left(22 - \sqrt{-9}\right)$

Perform the indicated operations (multiply and divide) and simplify. Write each answer in the form $a + bi$. Note: Before using the product rule for radicals, you must convert in terms of *i* first

$(7i)(6i)$ $\sqrt{-5} \cdot \sqrt{-2}$

$5i(2+7i)$ $(6-5i)(3+4i)$

Perform the indicated operations (divide complex numbers) and simplify. Write each answer in the form $a+bi$.

$\dfrac{3+8i}{9i}$ $\dfrac{5+3i}{7-4i}$

$2x^2-3x+5=0$ $x^3+8=0$