

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 $a + bi$.

$(-5 - i) - (-7 + 5i)$

$(-\sqrt{16} - \sqrt{-25}) + (22 - \sqrt{-9})$

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 $a + bi$.

$$\frac{3 + 8i}{9i}$$

$$\frac{5 + 3i}{7 - 4i}$$