

5.6 Evaluate $\sqrt{9} = 3$

Solve $\sqrt{x^2} = \sqrt{9}$

$$x = \pm 3$$

$$\sqrt{-9}$$

$$\sqrt{x^2} = \sqrt{-9}$$

$$x =$$

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

$$\sqrt{-9}$$

$$\sqrt{9 \cdot -1}$$

$$\sqrt{9} \cdot \sqrt{-1}$$

$$3i$$

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

Evaluate

$$\sqrt{-25}$$

$$5i$$

$$\sqrt{25 \cdot -1}$$

$$\sqrt{25} \cdot \sqrt{-1}$$

Solve

$$x^2 + 25 = 0$$

$$\sqrt{x^2} = \sqrt{-25}$$

$$x = \pm 5i$$

$$x^2 = -25$$

$$(5i)(5i)$$

$$25i^2$$

$$25(-1)$$

$$-25$$

$$(-5i)(-5i)$$

$$25i^2$$

$$25(-1)$$

$$-25$$

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

$$i^2 = -1$$

$$\sqrt{-32}$$

$$\sqrt{32 \cdot -1}$$

$$\sqrt{32} \sqrt{-1}$$

$$1 \cdot 32$$

~~$$2 \cdot 16$$~~

$$4 \cdot 8$$

$$\sqrt{16 \cdot 2} \sqrt{-1}$$

$$\sqrt{16} \cdot \sqrt{2} \cdot \sqrt{-1}$$

$$4 \sqrt{2} i$$

$$\sqrt{4 \cdot 8}$$

$$2 \sqrt{8}$$

$$2 \sqrt{4 \cdot 2}$$

$$4 \sqrt{2}$$

$$\sqrt{-13}$$

$$\sqrt{13 \cdot -1}$$

$$\sqrt{13} \sqrt{-1}$$

$$i \sqrt{13}$$

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

Complex Number System

Complex Number

$$a + bi$$

Real + Imaginary

$$2 + 5i$$

Real Imaginary
2 5

$$0 + 7i$$

Real Imaginary
0 7

$$3 + 0i$$

Real Imaginary
3 0

$$(4i)(3i)$$

$$12i^2$$

$$12(-1)$$

$$-12$$

$i = \sqrt{-1}$

$i^2 = -1$

$$(5i)(7i)$$

$$35i^2$$

$$35(-1)$$

$$-35$$

$$i^2 = -1$$

$$(3 + 4i) + (2 + 9i)$$

$$5 + 13i$$

$$(2 + i) + (4 + 5i)$$

$$6 + 6i$$

$$4(5 + 2i)$$

$$20 + 8i$$

$$(7 + di) - (2 + 4i)$$

$$5 - 2i \quad 2 - 4$$

$$(7 + 4i) - (2 + di)$$

$$5 + di$$

$$7 + 4i - 2 - di$$

$$(-5 - 3i) - (2 - 6i)$$

$$-7 + 3i$$

$$-5 - 3i - 2 + 6i$$