

5.6 Complex Numbers

$$a + bi$$

$$\begin{array}{cc}
 a + 5i \\
 \text{Real} & \text{Imaginary} \\
 \underline{2} & \underline{5}
 \end{array}$$

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

$$i^2 = -1$$

$$\text{Ex. } \sqrt{-36}$$

$$\sqrt{36 \cdot -1}$$

$$\sqrt{36} \sqrt{-1}$$

$$6i$$

$$\text{Ex. } (2i)(3i)$$

$$6i^2$$

$$6(-1)$$

$$-6$$

$$0 + 6i$$

$$\sqrt{-25} \cdot \sqrt{-4}$$

$$5i \cdot 2i$$

$$10i^2$$

$$-10$$

$$i^2 = -1$$

$$\begin{array}{l}
 \sqrt{25} \cdot \sqrt{4} \\
 5 \cdot 2 \\
 10 \\
 \sqrt{100} \\
 10
 \end{array}$$

$$(4 - 3i) + (5 - 8i)$$

$$9 - 11i$$

$$(5 - 2i) - (3 - 4i)$$

$$2 + 2i$$

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

$$\text{FOIL } 10 - 8i + 15i - 12i^2$$

$$10 - 8i + 15i - 12(-1) \quad i^2 = -1$$

$$10 - 8i + 15i + 12$$

$$10 + 7i + 12$$

$$22 + 7i$$

$$a + bi$$

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

$$i^2 = -1$$

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

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

$$16 + 12i + 12i + 9i^2$$

$$16 + 24i + -9$$

$$7 + 24i$$

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

$$4 - 10i + 10i - 25i^2$$

$$4 + 25$$

$$29$$

$$29 + 0i$$

Conjugates

$$2 + 5i$$

$$2 - 5i$$

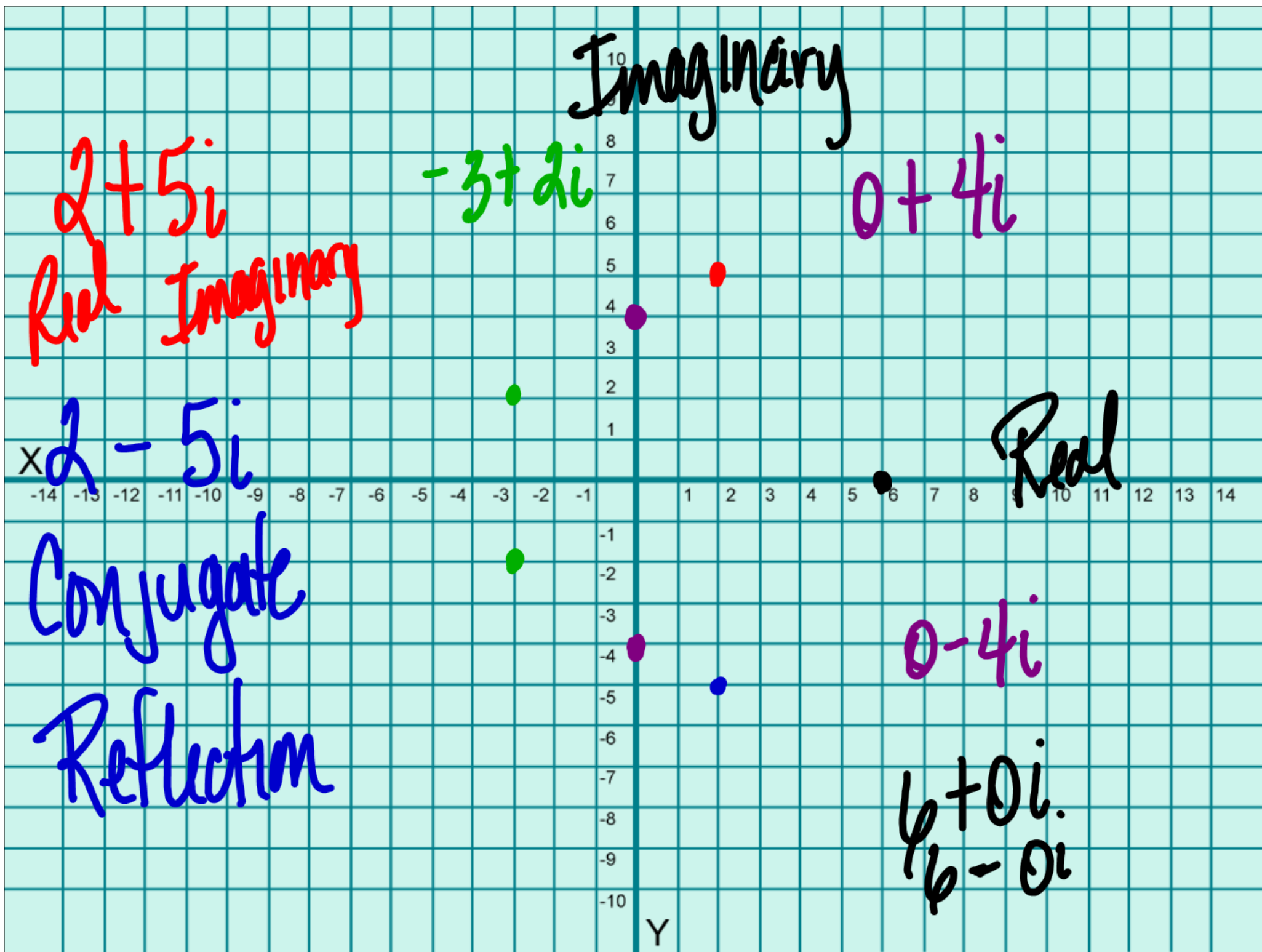
Switch
middle
sign

$$-4 + 9i$$

$$-4 - 9i$$

$$1 - 3i$$

$$1 + 3i$$



p 320

14-96E

14-22E

46-62E

76-86E Graph