

Multiplying Complex Numbers

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

$$15+6i+20i+8i^2$$

$$15+26i-8$$

$$7+26i$$

Remember $i^2 = -1$

Find the multiplicative inverse of $4-5i$.

$$\frac{1}{4-5i} \left(\frac{4+5i}{4+5i} \right) = \frac{4+5i}{16-25i^2} = \frac{4+5i}{16+25} = \frac{4+5i}{41}$$

Find the multiplicative inverse of $10i$

$$\frac{1}{10i} \left(\frac{i}{i} \right) = \frac{i}{10i^2} = -\frac{i}{10}$$

$$(5 - 3i\sqrt{2})(6 + i\sqrt{2})$$

$$30 + 5i\sqrt{2} - 18i\sqrt{2} - 3i^2\sqrt{2}(2)$$

$$30 - 13i\sqrt{2} + 6$$

$$\boxed{36 - 13i\sqrt{2}}$$

HWK: p. 216
(26-45)