

$$1) \sqrt{-9} = \sqrt{(-1)(9)} = \sqrt{9} \cdot \sqrt{-1} = \pm 3i$$

DISTRIBUTE

$$11) 4i(6+7i) = 4i(6) + (4i)(7i)$$

$$24i + 28i^2$$

$$24i + 28(-1)$$

$$\left. \begin{array}{l} 24i + 28i^2 \\ 24i + 28(-1) \end{array} \right\} i^2 = -1$$

$$\boxed{-28 + 24i}$$

FOIL!

$$15) (10+4i)(5+6i) = 10(5) + 10(6i) + 4i(5) + (4i)(6i)$$

$$= 50 + \underbrace{60i + 20i}_{\text{CLT}} + 24i^2$$

$$= 50 + 80i - 24$$

$$= \boxed{26 + 80i}$$

$\left. \begin{array}{l} - \\ - \\ 0 \\ - \\ - \end{array} \right\} i^2 = -1$

The conjugate of $(a+bi) = (a-bi)$

$$21) \frac{6}{2+i} \cdot \frac{(2-i)}{(2-i)} = \frac{6(2-i)}{(2+i)(2-i)} = \frac{12-6i}{4-\cancel{2i+2i}-i^2} = \frac{12-6i}{4-i^2} =$$

\uparrow Conjugates
 \uparrow by 1 does not change value!
 \uparrow b/c $i^2 = -1$

$$\frac{12-6i}{4-(-1)} = \frac{12-6i}{5} = \left(\frac{12}{5} - \frac{6}{5}i \right)$$