

1.3 Ex 4

①

$$\begin{aligned} \textcircled{a} (3 - 4i) + (-2 + 6i) &= \\ &= 3 - 2 - 4i + 6i = \boxed{1 + 2i} \end{aligned}$$

$$\begin{aligned} \textcircled{b} (-4 + 3i) - (6 - 7i) &= \\ &= \underbrace{-4}_{\sim} + \underbrace{3i}_{\sim} - \underbrace{6}_{\sim} + \underbrace{7i}_{\sim} = \boxed{-10 + 10i} \end{aligned}$$

Ex 5 Multiply

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$$\begin{aligned} \textcircled{a} (2 - 3i)(3 + 4i) &= 6 + \underbrace{8i}_{\sim} - \underbrace{9i}_{\sim} - 12i^2 \\ &= 6 - i - 12(-1) = 6 + 12 - i \\ &= \boxed{18 - i} \end{aligned}$$

$$\begin{aligned} \textcircled{b} (4 + 3i)^2 &= (4 + 3i)(4 + 3i) \\ &= 16 + \underbrace{12i}_{\sim} + \underbrace{12i}_{\sim} + 9i^2 \\ &= 16 + 24i - 9 = \boxed{7 + 24i} \end{aligned}$$

$$\begin{aligned} \textcircled{c} (6 + 5i)(6 - 5i) &= 36 - \cancel{30i} + \cancel{30i} - 25i^2 \\ &= 36 - 25(i^2) = 36 + 25 = 61 + 0i \\ &= \boxed{61} \end{aligned}$$

Complex Conjugates $a + bi$ $\underline{a - bi}$