

- ❖ Show all work
- ❖ No notes, books, or calculators allowed.
- ❖ Write answers in lowest terms when possible

Simplify the expressions.

1. (3 points) $(8 - 4i) + (-3 + 2i) - (4 - 6i)$

$$\begin{aligned} &= 8 - 3 - 4 + (-4i) + 2i + 6i \\ &= \boxed{1 + 4i} \end{aligned}$$

2. (3 points) $(2 - i)(5 - 3i)$

$$\begin{aligned} &= 10 - 6i - 5i + 3i^2 \\ &= 10 - 11i + 3(-1) \\ &= 10 - 3 - 11i \\ &= \boxed{7 - 11i} \end{aligned}$$

Rationalize the denominator.

3. (4 points) $\frac{6}{3-i}$

$$\begin{aligned} \frac{6}{3-i} \cdot \frac{3+i}{3+i} &= \frac{6(3+i)}{9+1} = \frac{18+6i}{10} \\ &= \frac{2(9+3i)}{2 \cdot 5} \\ &= \boxed{\frac{9+3i}{5}} \end{aligned}$$