

PRE-AP ALGEBRA 2

3B.2 CLASSWORK

1) Evaluate the expressions.

- a) $\sqrt{-16}$
 b) $(9i)^2$
 c) $\sqrt{-121} \cdot \sqrt{-81}$

a) $\sqrt{-16} = 4i$

b) $(9i)^2 = 81i^2 = -81$

c) $\sqrt{-121} \cdot \sqrt{-81} = 11i \cdot 9i = 99i^2 = -99$

2) For $z_1 = 11 + 7i$ and $z_2 = 5 - 9i$, calculate

- a) $z_1 + z_2$
 b) $z_1 - z_2$
 c) $z_1 \cdot z_2$

$$(a) (11 + 7i) + (5 - 9i) = 11 + 5 + 7i - 9i = 16 - 2i$$

$$(b) (11 + 7i) - (5 - 9i) = 11 - 5 + 7i + 9i = 6 + 16i$$

$$(c) (11 + 7i)(5 - 9i) = 55 - 99i + 35i - 63i^2 = 55 + 63 - 99i + 35i = 118 - 64i$$

3) Write down the conjugate of:

- a) $-17i$
 b) $2 - 4i$

a) $17i$

b) $2 + 4i$

4) Calculate $(3 + 8i)(3 - 8i)$.

$$(3 + 8i)(3 - 8i) = 9 - 24i + 24i - 64i^2 = 9 + 64 = 73$$

5) Calculate $(11 + 7i) \div (5 - 9i)$.

$$\frac{(11 + 7i)}{(5 - 9i)} \cdot \frac{(5 + 9i)}{(5 + 9i)} =$$

$$= \frac{55 + 99i + 35i + 63i^2}{25 + 45i - 45i - 81i^2} =$$

$$= \frac{55 - 63 + 99i + 35i}{25 + 81} = \frac{-8 + 134i}{106} =$$

$$= -\frac{4}{53} + \frac{67}{53}i$$