Outcome 1 – Adding and subtracting complex numbers

Key Facts/Formulae:

i, the imaginary number, is defined as $i = \sqrt{-1}$

A complex number, z, is one that can be written in the form $a + bi$.

a is the real part b is the imaginary part

To add/subtract complex numbers:

- add/subtract the real parts
- add/subtract the imaginary parts

Worked Example:

Let $z = 3 + 2i$ and $w = 7 - 5i$.

Find $z + w$ and $z - w$.

$$z + w = 3 + 2i + (7 - 5i)$$
$$= 10 - 3i$$

$$z - w = 3 + 2i - (7 - 5i)$$
$$= -4 + 7i$$

Questions...

Let $p = 4 + i$, $q = 5 + 2i$, $r = 3 - 6i$ and $s = -9 + 3i$.

Find;

1. $p + q$
2. $r + s$
3. $q - p$
4. $s - q$
5. $p + q + s$
6. $q + r - s$

Answers

1 $9 + 3i$

2 $-6 + 3i$

3 $1 + i$

4 $-14 + i$

5 $6i$

6 $17 - 8i$