Sadiq Public School

Do the right, fear no man

Mathematics S-1 Saturday , 16th Nov 24

Topic: Conjugate of a Complex Number

Ex. 2.6, Q. 6, (page 42)

Information:

2.5.3 Conjugate of a Complex Number

If we change i to –i in z = a + bi, we obtain another complex number a – bi called the complex conjugate of z and is denoted by z (read z bar).

Thus, if $z = -1 - i$, then $\overline{z} = -1 + i$.

The numbers a + bi and a — bi are called conjugates of each other.

Note that:

(i) $\overline{z} = z$

(ii) The conjugate of a real number $z = a + 0i$ coincides with the number itself, since $\overline{z} = \overline{a + 0i} = a - 0i$.

(iii) conjugate of a real number is the same real number.

Working (C.W)Ex 2.6, Q. 6,

Q. 6: If $z = 2 + 3i$ and $w = 5 - 4i$

(i) $\overline{z + w} = \overline{z} + \overline{w}$

$$L.H.S = \overline{z + w}$$
$$= \overline{2 + 3i + 5 - 4i}$$
$$= \overline{7 - i}$$
$$= \overline{7} + \overline{-i}$$
$$= 7 + i$$
$$R.H.S = \overline{z} + \overline{w}$$
$$= \overline{2 + 3i} + \overline{5 - 4i}$$
$$= \overline{2} + \overline{3i} + \overline{5} + \overline{-4i}$$
$$= 2 - 3i + 5 + 4i$$
$$= 7 + i$$
$$L.H.S = R.H.S$$

Practice:

Ex 2.6

Q. 6: **If $z = 2 + 3i$ and $w = 5 - 4i$ then show that**

(ii) $\overline{z - w} = \bar{z} - \bar{w}$

(iii) $\overline{zw} = \bar{z}\bar{w}$

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