

5- solve the equation $(3-2i)(x+iy) = 2(x-iy) + (-1+2i)$

6- prove the following :-

1- $\overline{\overline{z}} = z$.

2- $\overline{z_1 z_2} = \overline{z_1} \overline{z_2}$.

3- $\overline{\left(\frac{z_1}{z_2}\right)} = \frac{\overline{z_1}}{\overline{z_2}}$.

4- $R(z) = \frac{z + \overline{z}}{2}$.

5- $|z|^2 = z \overline{z}$.

6- $|z| = |\overline{z}|$

7- $|z_1 z_2| = |z_1| |z_2|$.

8- $-|z| < R(z) < |z|$.

6- $-|z| < I(z) < |z|$.

7- evaluate $\left| \frac{(2-3i)(3+4i)}{(6+4i)(5-5i)} \right|$

8- If $z = (x+iy)$, then prove $\frac{1}{z} = \left(\frac{x}{x^2+y^2} - i \frac{y}{x^2+y^2} \right)$.

9- find the value of $\left(\frac{34}{(1-4i)(5+3i)} \right)^2$.

10- If $z = x+iy$, then $|z|^2 \geq 2|x||y|$.

11- find the value of $\overline{\overline{z} + 5i}$.

7- If $\frac{x-iy}{x+iy} = a+ib$, then prove $a^2 + b^2 = 1$.

8- If $z = (x+iy)$ & $w = (u+iv)$ are complex numbers, then prove

$$x^2 + y^2 = \frac{(u-1)^2 + v^2}{(u+1)^2 + v^2} \text{ if } z = \frac{w-1}{w+1}.$$

9- prove $R(iz) = -I(z)$.