

Solutions

2.1 Modulus= $\sqrt{3^2+4^2}=5$.

2.2 Conjugate multiplication gives $3^2+4^2=25$, with imaginary parts cancelling.

2.3 Multiply numerator and denominator by 3-4i: $1/(3+4i)=(3-4i)/25$. Its real part is $3/25=0.12$.

2.4 False. The square root of a sum is not the sum of the square roots. An inverse tangent alone may return the wrong quadrant. Do not confuse modulus with squared modulus.

2.5 A The number obtained by reversing the sign of the imaginary part.

3.1 Polar modulus 8 and argument $-\pi/2$ give roots modulus $\sqrt{8}$, arguments $-\pi/4$ and $3\pi/4$: $2-2i$ and $-2+2i$. Squaring each gives $-8i$. Both roots are needed.