

University of Toronto at Scarborough
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TEST 1

MATC34H – Complex Variables

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1. Show that $|z+w|^2 - |z-w|^2 = 4\operatorname{Re}(z\bar{w})$ for any complex numbers z, w .
2. Show that, if $\{a_n\}$ and $\{\theta_n\}$ are sequences of complex numbers with

$$\lim_{n \rightarrow \infty} a_n = A$$

and

$$\lim_{n \rightarrow \infty} \theta_n = B$$

then

$$\lim_{n \rightarrow \infty} (a_n + \theta_n) = A + B$$

3. Find the values of $\log(1 - i\sqrt{3})$.