MA 513
Important Formulas

Roots of Complex Number

$c_k = \sqrt[n]{r_0} \exp\left[i\left(\frac{\theta_0}{n} + \frac{2k\pi}{n}\right)\right], \quad k = 0, 1, 2, \ldots, n-1$

Cauchy-Riemann Equations (Differentiability)

$$\begin{array}{ll} u_x = v_y \\ u_y = -v_x \end{array} \quad \text{and} \quad \begin{array}{ll} ru_r = v_\theta \\ u_\theta = -ru_r \end{array}$$