

Internal Examination 2018

Semester-I

Mathematics (General)-CC-T-01

Differential Calculus, F.M.-10

(i) If $y = e^{a \sin^{-1} x}$, show that

$$(1 - x^2)y_{n+2} - (2n + 1)xy_{n+1} - (n^2 + a^2)y_n = 0.$$

Hence find $(y_n)_0$.

(ii) If ρ and ρ_1 be the radii of curvature at the ends of two conjugate diameters of an ellipse, prove that

$$\rho^{\frac{2}{3}} + \rho_1^{\frac{2}{3}} = \frac{b^2 + a^2}{(ba)^{\frac{2}{3}}}.$$

[3+3+4]