

MATHEMATICS FOR PROGRAM COURSE STUDENTS

CC-T-01

10

Answer any TWO questions:

2 × 5

1. (i) Evaluate $\lim_{x \rightarrow \pi} \frac{\sin x}{(\pi - x)}$.

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(ii) If $v = f(u)$, where u is a homogeneous function in x and y of degree n ,
Show that, $x \frac{\partial v}{\partial x} + y \frac{\partial v}{\partial y} = nu \frac{dv}{du}$.

3

2. Trace the curve $y^2(a + x) = x^2(a - x)$.

3. Prove that between any two real roots of the equation $e^x \sin x + 1 = 0$, there is at least one real root of the equation $\tan x + 1 = 0$.

END OF QUESTIONS FOR PROGRAM COURSE