Prabhat Kumar College, Contai

Department of Mathematics

4th Semester Mathematics (General) CBCS Pattern

Paper: SEC-2 **Time: 1 hours**

Answer any one :-

1. Prove that if $I_n = \int tan^n x\, dx$ then prove that $I_n = \frac{tan^{n-1}x}{n-1} - I_{n-2}$ where n being a positive integer greater than 1 .
2. Prove that if $I_n = \int sec^n x\, dx$ then prove that $I_n = \frac{sec^{n-2}x\, tan\, x}{n-1} + \frac{n-2}{n-1} I_{n-2}$.
3. Calculate the area enclosed by the curve $x = a\, cos^3 t\ and\ y = b\, sin^3 t$.