

Name:.....Serial#ID#:.....

Q.1: Evaluate the integral $\int_0^1 x^{\frac{3}{2}} \sqrt{2+x^{\frac{5}{2}}} dx$

Q.2: Evaluate the integral $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} |\sin x| dx$

Q.3: Evaluate the integral $\int_0^{\pi} \frac{\sin^2 x}{1 + \cos x} dx$

Q.4: Evaluate the integral $\int \frac{\sec x \tan x}{1 + \sec^2 x} dx$

Q.5: By comparing areas, show that $\frac{1}{2} + \frac{1}{3} + \cdots + \frac{1}{n} < \ln n < 1 + \frac{1}{2} + \cdots + \frac{1}{n-1}$. (Show all your work)

Q.6: Find area of the region bounded by the $y = x^2 - 2x + 2$ and $y = -x + 4$.

Q.7: Find volume of solid obtained by rotating the region bounded by $y = x^2$, and $x = y^2$ about the line $x = -2$.