CLASS XII DEFINITE INTEGRALS and APPLICATION Of INTEGRALS

USING PROPERTIES OF DEFINITE INTEGRALS EVALUATE

Q1. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} sin^3 x \ dx.$

Q2. $\int_0^3 |x-1| + |x-2| + |x| \ dx$

Q3. $\int_{-3}^3 |x+1| \ dx.$

Q4. $\int_0^{\pi/4} \sqrt{1+sin2x} \ dx.$

Q5. $\int_{\pi/6}^{\pi/3} \frac{sinx + cosx \ dx}{\sqrt{sin \ 2x}}.$

Q6. $\int_0^{\pi} \frac{x \ tanx}{secx + tanx} dx$

Q7. Prove that:- $\int_0^1 tan^{-1} \left(\frac{1}{1-x+x^2} \right) dx. = \frac{\pi}{2} - \log 2$

Q8. $\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} (sin|x| - cos|x|) \ dx.$

Q9. $\int_0^{\pi} \frac{x \ tanx \ dx}{secx \ cosecx}$

Q.10. Using limit of sum evaluate $\displaystyle\int_{a}^{b}(x+e^{x}+\cos x)\,dx$

AREA BETWEEN THE CUVES (USING INTEGRATION)

Q1.Find the area bounded by the curve $x^2 = 4y$ and straight line $x = 4y - 2$

Q2. Draw the rough sketch of following and find the area of the region enclosed

(a) $\{ x^2 \le y \le |x| \}$ and

(b) $\{(x,y) : |x - 1| \le y \le \sqrt{5 - x^2} \}$.

Q3. Find the area of the circle : $x^2 + y^2 = 4$ which is exterior to the parabola $y^2 = 4x$.

Q4.Find the area enclosed between the circles: $x^2 + y^2 = 4$, $x^2 + (y-2)^2 = 4$.

Q5. Find the area enclosed between the parabolas: $x^2 = 4x$, $y^2 = x$.

Q6.Find the area of the triangle formed by the points (2,2), (4,1),and (5,2).

Q7.Find the area of the parabola: $y^2 = 4a^2 (x-3)$ above x-axis under the constraints x = 3, y= 4a .