23MA101 - Matrices and Calculus

UNIT 4

Simha's Classes

Integrals

Substitution method

1.Evaluate $\int \sqrt{a^2 - x^2}\ dx$ by using substitution rule.

Solution: Click Here

2.Evaluate $\int x^3\sqrt{x^2 + 1}\ dx$

Solution: Click Here

3.Evaluate $\int x\sqrt{1 + x - x^2}dx$

Solution: Click Here

4.Evaluate $\int_0^1 \frac{dx}{(1 + \sqrt{x})^4}$

Solution: Click Here

5.Evaluate $\int \frac{\sqrt{9 - x^2}}{x^2}\ dx$ using trignonmetric substitution.

Solution: Click Here

Integration by parts

1.Evaluate $\int e^{ax} \cos bx\ dx$

Solution: Click Here

2.Evaluate $\int e^{ax} \sin bx\ dx$

Solution: Click Here

3.Evaluate $\int_0^\infty e^{-ax} \cos bx\ dx.$

Solution: Click Here

4.Evaluate $\int_0^{\infty} e^{-ax} \sin bx \ dx$

Solution: Click Here

5.Evaluate $\int \frac{(\log x)^2}{x^2} \ dx$

Solution: Click Here

Integration by method of partial fractions

1.Evaluate $\int \frac{3x+1}{(x-1)^2 (x+3)} \ dx$

Solution: Click Here

2.Evaluate $\int \frac{x^2+2x-1}{2x^3+3x^2-2x} \ dx$

Solution: Click Here

3.Integrate $\int_0^{\frac{\pi}{2}} \frac{\sin x \cos x}{\cos^2 x + 3\cos x + 2} dx.$

Solution: Click Here

Property

1.Evaluate $\int_0^{\frac{\pi}{4}} \log(1+\tan\theta) \ d\theta$

Solution: Click Here

2.Evaluate $\int_2^3 \frac{\sqrt{x}}{\sqrt{5-x}+\sqrt{x}} \ dx$

Solution: Click Here

3.Evaluate $\int_0^{\frac{\pi}{2}} \log \sin x dx$ and hence find the value of $\int_0^1 \frac{\sin^{-1} x}{x} dx$.

Solution: Click Here

Integration function involving in square root

1.Evaluate $\int \frac{dx}{\sqrt{3x - x^2 - 2}}$.

Solution: Click Here

2.Evaluate $\int \frac{3x - 2}{\sqrt{4x^2 - 4x - 5}}\, dx$.

Solution: Click Here

3.Evaluate $\int \frac{2x + 5}{\sqrt{x^2 - 2x + 10}}\, dx$.

Solution: Click Here

4.Evaluate $\int \frac{x}{\sqrt{x^2 + x + 1}}\, dx$.

Solution: Click Here