

I. Integrate $\int (6x + 5)\sqrt{(6 + x + x^2)}dx$

II. Integrate $\int e^{\tan^{-1} x} \left(\frac{1 + x + x^2}{1 + x^2} \right) dx$

III. Integrate $\int \frac{\log x}{(1 + x)^3} dx$

IV. Integrate $\int \frac{dx}{\sqrt{\sin^3 x \cdot \sin(x + a)}}$

V. Integrate $\int \frac{3 \cos \theta + 2 \sin \theta}{4 \sin \theta + 5 \cos \theta} dx$

VI. Integrate $\int \frac{dx}{\sqrt{1 - e^{2x}}}$

VII. Integrate $\int_0^4 (3x^2 + e^2 x) dx$ as a limit of the sum

VIII. Integrate $\int_{-\frac{1}{2}}^{\frac{3}{2}} |x \sin \pi x| dx$

IX. Integrate $\int_0^{\frac{\pi}{4}} \left(\frac{\sin x + \cos x}{9 + 16 \sin 2x} \right) dx$

X. Integrate $\int_0^{\frac{\pi}{4}} (\sqrt{\tan x} + \sqrt{\cot x}) dx$

XI. Integrate $\int_0^{\frac{\pi}{4}} \log \sin x dx$

XII. Integrate $\int_0^{\frac{\pi}{2}} \frac{x dx}{1 + \cos \alpha \sin x}$ $0 < \alpha < \frac{\pi}{2}$

XIII. Find the area of the region $\{(x, y) : x^2 + y^2 \leq 1 \leq x + y\}$

XIV. Find $\int \frac{(\sin^{-1} \sqrt{x} - \cos^{-1} \sqrt{x})}{(\sin^{-1} \sqrt{x} + \cos^{-1} \sqrt{x})} dx$

XV. Find $\int \frac{\sqrt{\cos 2x}}{\sin x} dx$

XVI. Find $\int \frac{dx}{\sqrt{\sin^3 x \sin(x + a)}}$

Lead the Class