

INTEGRATION

Exercise 3.4 for Class XII

Question # 1

(i) $\int x \sin x \, dx$

(ii) $\int \ln x \, dx$

(iii) $\int x \ln x \, dx$

(iv) $\int x^2 \ln x \, dx$

(v) $\int x^3 \ln x \, dx$

(vi) $\int x^4 \ln x \, dx$

(vii) $\int \tan^{-1} x \, dx$

(viii) $\int x^2 \sin x \, dx$

(ix) $\int x^2 \tan^{-1} x \, dx$

(x) $\int x \tan^{-1} x \, dx$

(xi) $\int x^3 \tan^{-1} x \, dx$

(xii) $\int x^3 \cos x \, dx$

(xiii) $\int \sin^{-1} x \, dx$

(xiv) $\int x \sin^{-1} x \, dx$

(xv) $\int e^x \sin x \cos x \, dx$

(xvi) $\int x \sin x \cos x \, dx$

(xvii) $\int x \cos^2 x \, dx$

(xviii) $\int x \sin^2 x \, dx$

(xix) $\int (\ln x)^2 \, dx$

(xx) $\int \ln(\tan x) \sec^2 x \, dx$

(xxi) $\int \frac{x \sin^{-1} x}{\sqrt{1-x^2}} \, dx$

Question # 2

(i) $\int \tan^4 x \, dx$

(ii) $\int \sec^4 x \, dx$

(iii) $\int e^x \sin 2x \cos x \, dx$

(iv) $\int \tan^3 x \cdot \sec x \, dx$

(v) $\int x^3 e^{5x} \, dx$

(vi) $\int e^{-x} \sin 2x \, dx$

(vii) $\int e^{2x} \cdot \cos 3x \, dx$

(viii) $\int \operatorname{cosec}^3 x \, dx$

Question # 3

$\int e^{ax} \sin bx \, dx$

Question # 4

(i) $\int \sqrt{a^2 - x^2} \, dx$

(ii) $\int \sqrt{x^2 - a^2} \, dx$

(iii) $\int \sqrt{4 - 5x^2} \, dx$

(iv) $\int \sqrt{3 - 4x^2} \, dx$

(v) $\int \frac{dx}{\sqrt{x^2 + 4}}$

(vi) $\int x^2 e^{ax} \, dx$

Question # 5

(i) $\int e^x \left(\frac{1}{x} + \ln x \right) dx$

(ii) $\int e^x (\cos x + \sin x) \, dx$

(iii) $\int e^{ax} \left[a \sec^{-1} x + \frac{1}{x\sqrt{x^2 - 1}} \right] dx$

(iv) $\int e^{3x} \left(\frac{3 \sin x - \cos x}{\sin^2 x} \right) dx$

(v) $\int e^{2x} (-\sin x + 2 \cos x) \, dx$

(vi) $\int \frac{x e^x}{(1+x)^2} \, dx$

(vii) $\int e^{-x} (\cos x - \sin x) \, dx$

(viii) $\int \frac{e^{m \tan^{-1} x}}{1+x^2} \, dx$

(ix) $\int \frac{2x}{1 - \sin x} \, dx$

(x) $\int \frac{e^x(1+x)}{(2+x)^2} \, dx$

(xi) $\int \left(\frac{1 - \sin x}{1 - \cos x} \right) e^x \, dx$