

Session 8: Integration Practice

November 8, 2024

Evaluate the following indefinite integrals:

Trigonometric Functions

1. $\int \sin(3x) \cos(3x) dx$
2. $\int \sec^2(x) \tan^3(x) dx$
3. $\int \frac{1}{1+\cos(x)} dx$
4. $\int \sin^4(x) dx$
5. $\int \frac{\cos(2x)}{\sin^2(2x)} dx$

Exponential Functions

1. $\int x e^{x^2} dx$
2. $\int e^x \sqrt{1+e^x} dx$
3. $\int \frac{e^{2x}}{1+e^{4x}} dx$
4. $\int e^{\sin(x)} \cos(x) dx$
5. $\int (e^x + e^{-x})^2 dx$

Logarithmic Functions

1. $\int \frac{1}{x \ln(x)} dx$
2. $\int \frac{\ln(x)^2}{x} dx$
3. $\int \frac{1}{x(1+\ln(x)^2)} dx$
4. $\int \tan(x) \ln(\cos(x)) dx$
5. $\int \frac{\sin(\ln(x))}{x} dx$