Tutorial 2

Question 1

Evaluate the following integrals

1. $\int_0^1 (x-1)\, e^{-x} dx$
2. $\int x^{11} \ln x dx$

Question 2

Use trigonometric substitution to evaluate the integral

$$\int \frac{x^2}{\sqrt{16-x^2}} dx.$$

Question 3

Evaluate the following integrals

1. $\int_0^{\frac{\pi}{4}} x \sin(2x) dx$
2. $\int \cos(\ln x)\, dx$

Question 4

Use trigonometric substitution to evaluate the integral

$$\int \frac{\sqrt{x^2-4}}{x} dx.$$

Question 5

Use Trigonometric Substitution to evaluate

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

Question 6

Use trigonometric substitution to evaluate the integral

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

Question 7

Evaluate the following integrals

$$(1)\quad \int_0^{\pi} x\sin\left(x-\frac{\pi}{2}\right)dx, \qquad (2)\quad \int x^2\ln x dx$$

Question 8

Evaluate the following integrals

$$(1)\quad \int_0^{\pi} x\cos\left(3x-\pi\right)dx, \qquad (2)\quad \int \ln\left(x^2+1\right)dx$$

Question 9

Evaluate the integral

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

Question 10

Evaluate the following integrals

1. $\int x^{10}\ln x dx$ 2. $\int \cos 2x \sin 5x dx$.