

MATH 138 Calculus 2, Exercises for Chapter 2

1: Evaluate each of the following definite integrals.

(a) $\int_1^3 x \sqrt[3]{x^2 - 1} \, dx$

(b) $\int_0^{\pi/2} \frac{\cos^3 x}{1 + \sin^2 x} \, dx$

2: Evaluate each of the following definite integrals.

(a) $\int_1^4 \frac{\ln x}{\sqrt{x}} \, dx$

(b) $\int_0^2 x^2 e^{x/2} \, dx$

3: Find the following indefinite integrals.

(a) $\int (x^2 + 1) e^x \, dx$

(b) $\int \sin^3 x \cos^2 x \, dx$

4: Evaluate each of the following definite integrals.

(a) $\int_0^{\sqrt{3}} \frac{x^3 \, dx}{\sqrt{x^2 + 1}}$

(b) $\int_0^1 x \tan^{-1} x \, dx$

5: Evaluate the following definite integrals.

(a) $\int_0^4 \frac{x + 2}{\sqrt{2x + 1}} \, dx$

(b) $\int_0^{\pi/6} \sec^4 2x \, dx$

6: Find the following indefinite integrals.

(a) $\int \frac{4x}{(x + 1)(x^2 + 4x + 5)} \, dx$

(b) $\int \frac{x^2}{\sqrt{1 - 4x^2}} \, dx$

7: Evaluate the following definite integrals.

(a) $\int_0^1 (3 + 2x - x^2)^{-3/2} \, dx$

(b) $\int_1^2 \frac{5x^2 + 9}{x^4 - 9x^2} \, dx$