Integrals

Exercises

1.
Compute

$$\int (2x^3 - 3\sin x + 5\sqrt{x})\, dx\,.$$

2.
Compute

$$\int \left(\frac{3}{\sqrt[3]{x}} + \frac{1}{2\sqrt{x}} + x\sqrt[4]{x} \right) dx\,.$$

3.
Compute

$$\int \frac{dx}{x+3}\,.$$

4.
Compute

$$\int \cos 7x dx$$

5.
Evaluate the following integral3

1. $\int \frac{dx}{x^2+2x+2}$, 2. $\int \frac{x \cdot dx}{4-x^2}$, 3. $\int \frac{dx}{1+e^x}$, 4. $\int \frac{\sqrt[3]{\ln(x+1)}}{x+1} dx$ -

6.
Compute

$$F(x) = \int \frac{2x+3}{2 \cdot \sqrt{x^2+3x+5}}\, dx\,.$$

7.
Find the area of the region bounded by the two curves $y = f(x) = 4x$ and $y = g(x) = x^3$.

8.
Evaluate the following improper integral, if it exists:

$$\int_2^{\infty} \frac{dx}{x^2-1} \quad (\text{Vor.}: x \neq 2)$$

(To be continued.)