Strathmore
UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES

BACHELOR OF SCIENCE IN INFORMATICS AND COMPUTER SCIENCE (BICS)

Worksheet Two

ICS 1204: Integral Calculus

Date: 6^{th} **October 2025** **Time: 1 Hour**

Instructions: Attempt all questions. Show all workings clearly.

1. Evaluate using substitution:
$$\int x\sqrt{x+3}\,dx$$

2. Compute:
$$\int \frac{x^2}{(x^3+1)^2}\,dx$$

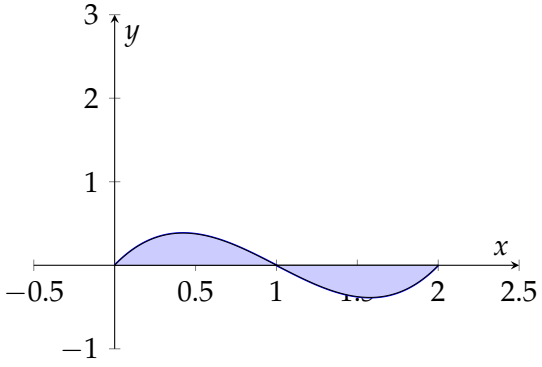
3. Show that:
$$\int \frac{1}{1+e^x}\,dx = x - \ln(1+e^x) + C$$

4. Evaluate using integration by parts:
$$\int x^2 e^x\,dx$$

5. Compute:
$$\int x^2 \ln(x)\,dx$$

6. Find:
$$\int e^x \cos x\,dx$$

7. Find the area enclosed by the curve $y = x^3 - 3x^2 + 2x$ and the x-axis between $x = 0$ and $x = 2$.



8. Find the area enclosed by the curves $y = e^{-x}$ and $y = 1 - x$ between their points of intersection.

9. Evaluate using partial fractions:

$$\int \frac{x+5}{x^2+2x-3}\,dx$$

10. Compute:

$$\int \frac{x^2+3x+2}{x^3+2x^2}\,dx$$

END OF WORKSHEET