Strathmore
UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES

BACHELOR OF BUSINESS INFORMATION TECHNOLOGY (BBT)

Assignment 2

BBIT 2104 CALCULUS II

Instructions: Answer **ALL** questions. Show your workings. **June 26, 2024**

1. Evaluate the following integrals

   (i) $\int 3\sin^2 x\,dx$ [2 Marks]

   (ii) $\int_{-1}^{0} \frac{t^3}{(2-t^4)^4}\,dt$ [3 Marks]

   (iii) $\int \frac{1+\cos x}{\sin^2 x}\,dx$ [3 Marks]

2. The marginal profit function for hard disks produced by the Elephant Media Company is given by

$$MP(x) = \frac{80x}{\sqrt{x^2+576}}, \qquad 0 \le x \le 100$$

   where x is the number of hard disks produced in a work shift and $MP(x)$ is the marginal profit in dollars.

   (i) Evaluate and interpret $MP(7)$. [2 Marks]

   (ii) Evaluate $\int_7^{45} MP(x)\,dx$ and interpret. [4 Marks]

   (iii) Knowing that the Elephant Media Company breaks even when 32 hard disks are sold, recover the profit function P. [3 Marks]

3. Carry out the following integrations: [3 Marks]

$$\int_0^{\frac{\pi}{3}} \frac{1}{1-\sin x}\,dx$$

END

In groups of 5 students, this work should be submitted by 2:00 PM, 05-07-2024