

Module Detail		Trainee's Detail	
SECTOR:	ICT	Reg No:	
SUB-SECTOR:	Information Technology	Class:	Level 6 Information Technology
CERTIFICATE:	TVET Diploma	Trainer's Detail	
MODULE (Code & Title):	GENFM601: Fundamental Engineering Mathematics	Name:	HAKIZIMANA Thacien
Competence:	Apply fundamental Engineering Mathematics	Additional info	
Training Centre:	IPRC Ngoma	Duration:	
Scored marks:	40	Due date:	22 nd April, 2022
		Signature:	
		Decision:	Competent
			Not Yet Competent

Assignment Unit 3: Apply Simple integrations

Learning Outcomes:

- 3.1. Demonstrate properly antiderivative of functions based on derivative
- 3.2. Apply properly definite integral of functions based on integration methods

Instructions: Attempt all questions in groups

Group Members No:

#	Names	Student Reg No	Signature
1			
2			
3			
4			
5			
6			
7			

Question 1: Calculate the following in integrals:

$$i) \int e^{-2x} \ln x \, dx$$

$$vi) \int \frac{-4 \, dx}{\sqrt{16 - 3x^2}}$$

$$ii) \int 4x \cos x \, dx$$

$$vii) \int \frac{-4x \, dx}{\sqrt{16 - 3x^2}}$$

$$iii) \int (2x + 1)^{12} \, dx$$

$$viii) \int \frac{16}{(x - 1)^2(x + 1)^3} \, dx$$

$$iv) \int \frac{3x \, dx}{2x^2 + 16}$$

$$ix) \int \frac{10(2x - 1)}{(x + 1)(x - 2)(x + 3)} \, dx$$

$$v) \int \frac{3 \, dx}{2x^2 + 16}$$

$$x) \int_0^2 \frac{3x^2 + 2x}{(x + 2)(x^2 + 4)} \, dx$$

Question 2: Calculate integrals of the following trigonometric functions

$$i) \int_0^{\pi} \sin^6 4x \, dx$$

$$ii) \int_0^{\pi} \sin^6 x \, dx$$

$$ii) \int_0^{\frac{\pi}{2}} \sin^5 x \, dx$$

Question 3:

Find the areas bounded by the given curves if they are revolved about the x -axis: (Before answering to each question sketch the situation use 1cm as unity)

$$y = 2x - x^2 \text{ and } y = 0$$

Question 4:

Find the volume generated by the areas bounded by the given curves if they are revolved about the x -axis: (Before answering to each question sketch the situation use 1cm as unity)

$$y = x + 1 \text{ and } y = 2x^2$$