



NATIONAL OPEN UNIVERSITY OF NIGERIA
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS
2021_2 EXAMINATION

COURSE TITLE: ADVANCED MATHEMATICS ECONOMICS

COURSE CODE: ECO 459

UNITS: 2

TIME ALLOWED: 2 HOURS

INSTRUCTION: ANSWER ANY THREE QUESTIONS

QUESTION ONE

- (a). Briefly explain the concept of Concept of Dynamic Economics. (7.3marks)
- (b). Write down the first 5th terms of each sequences if:
 - (i). $T_n = 3n$ (9marks)
 - (ii). $T_n = (-3)$. (7marks)

(23.3marks)

QUESTION TWO

- (a). Differentiate $3x^2 - x + 5$ with respect to x from the first principle. (12.3marks)
- (b). Differentiate with respect to x $y = 500 + 4x + 2x^2 - 10x^3 - 12x^4$. (5marks)
- (c). Differentiate $y = (3x - 4)(x^2 + 8)$ wrt x . (6marks)

QUESTION THREE

- (a). Integrate $\cos 4x$ with respect to x . (5.3marks)
- (b). With detailed example differentiate between Integration by Substitution and Integration by part. (8marks)
- (c). The marginal cost of a trader has been found to be $MC = 3q^2 + 8q + 400$. Determine the total variable cost of producing 100 units of the trade's product. (10marks)

QUESTION FOUR

- (a). Explain the term 'differential equation' (6.3marks)
- (b). Find the general solution for the differential equation $dy/dt + 4y = 12$ given that $y = 4$ and $z = 12$. (10marks)
- (c). Explain the term 'difference equation' (7marks)