COURSE TITLE: ADVANCED MATHEMATICS ECONOMICS
COURSE CODE: ECO 459
UNITS: 2
TIME ALLOWED: 3HOURS

INSTRUCTION: ANSWER FOUR (4) QUESTIONS. ALL QUESTIONS CARRY EQUAL MARKS

QUESTION ONE
(a). Given
$y = 4x + 8P$ find m in terms of y. (10marks)
(b). What is the 15th term of the sequence $- 3, 2, 4, \ldots\ldots$ (15marks)
(25marks)

QUESTION TWO
(a). Find (a) the 10th term of the given 128, by 32……(b) a formula for the nth term.
(10marks)
(b). Differentiate $3x^2 - x + 5$ with respect to x from the first principle. (5marks)
(15marks)

QUESTION THREE
(a). Given $y = 500 + 4x + 2x^2 - 10x^3 - 12x^4$, find $\frac{dy}{dx}$ (5marks)
(b). Evaluate $\int 2xe^x \, dx$ (10marks)
(15marks)

QUESTION FOUR
(a). The marginal cost of a trader has been found to be $MC = 3q^2 + 8q + 200$. Determine the total variable cost of producing 50 units of the trade's product. (10marks)
(b). Explain in details the term 'Differential Equation'. (5marks)
(15marks)

QUESTION FIVE
Find a formula for the nth term of the AP. 12, 5, 2, ……(15marks)