



SIR ARTHUR LEWIS COMMUNITY COLLEGE
ACADEMIC YEAR (2024/2025) - SEMESTER TWO
END OF SEMESTER EXAMINATION

COURSE CODE : MAT 126
COURSE TITLE : CRAFT MATHEMATICS IV
LECTURER(S) : VERCILLI GUSTAVE-LORD
DATE :
TIME :
DURATION : 2 hours
STUDENT ID # : _____

GENERAL INFORMATION AND INSTRUCTIONS

- Students must sign **IN** and **OUT** on the examination class list.
- Write your ID number on the question paper.
- This paper has **THREE (3)** questions.
- Answer **ALL** questions, in the spaces provided, showing all working where necessary.
- Non-programmable calculators are allowed.

Question #	Student mark	Moderated Mark	Total
1.			18
2.			15
3.			17
TOTAL			50

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Required Formulae

- Quadratic formula $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
- Simple Interest $I = Prt$

Instruction: Answer ALL questions in the spaces provided.

1. (a) The table below shows three quadratic expressions. Determine the values of **a**, **b** and **c** for each expression and write the answers under the appropriate column. [4]

Equation	<i>a</i>	<i>b</i>	<i>c</i>
$5 + x - 5x^2$			
$\frac{3}{8}x^2 - 7x$			
$3x^2 + 2$			

- (b) A quadratic curve is shown in Figure 1.

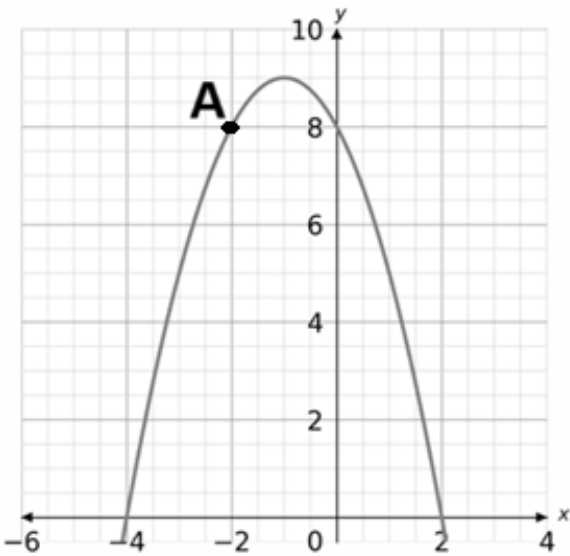


Figure 1

Use the graph in Figure 1 to find the following.

- i. Maximum value [1]
- ii. Axis of symmetry [1]
- iii. Coordinates of the vertex [1]
- iv. y - intercept [1]
- v. Roots [1]
- vi. State the coordinates of the point labelled A [1]
- vii. Given that the equation of this curve is $y = -x^2 - 2x + 8$, determine the value of y when $x = 4$.

.....
.....

(c)

Solve $x^2 - 7x - 3 = 0$ using the quadratic formula.

[3]

(d)

Solve $3x^2 + 7x + 2 = 0$ using factorisation.

[3]

Total 18 marks

2. The frequency distribution represents the commission earned (in dollars) by 100 salespeople employed at several branches of a retail company.

Table 1

Amount of commission earned (\$)	Frequency, f	Class midpoints, x	fx	Cumulative frequency
150-158	5			
159-167	16			
168-176	20			
177-185	21			
186-194	20			
195-203	15			
204-212	3			

i.

Complete the table by inserting the correct values under each column.

[6]

ii.

State the lower- and upper-class boundaries for the class interval 168 -176

[2]

- iii. Using relevant data from the table, calculate the mean amount of commission earned. [4]

- iv. Using relevant data from the table determine the number of salespeople who earned
 - i. less than \$185 [1]

 - ii. between \$167 and \$195 [1]

 - iii. more than \$176 [1]

Total 15 marks

3. (a) An entrepreneur needs to purchase a new piece of machinery for his welding business. The cash price of the item is \$18,599 plus 12% VAT. Calculate the cash price of the item with VAT. [3]

(b) The entrepreneur decides to pay for the piece of machinery using a hire purchase plan. Under this plan, the item must be paid over five years, and a 13% add-on rate is charged. Calculate the total to be paid back. [4]

(c) Calculate the monthly payment over the five-year period. [2]

(d) If this item has a salvage value of \$1500 after 20 years, use the straight-line depreciation method to

i. calculate the annual depreciation expense. [2]

ii. complete the depreciation schedule shown in Table 2 below: [6]

Table 2

End of year	Annual depreciation Expense	Accumulated depreciation	Ending Book Value
1			
2			
3			
4			

Total 17 marks

END OF EXAMINATION