**THE UNITED REPUBLIC OF TANZANIA**

**PRESIDENT’S OFFICE REGIONAL ADMINISTRATION AND LOCAL GOVERNMENT**

**KAGERA REGION**

**FORM FIVE KAGERA REGION ANNUAL EXAMINATION MAY 2024**

**141 BASIC APPLIED MATHEMATICS**

**TIME: 3 HOURS**

**Instructions**

1. This paper consists of **ten (10)** questions.

2. Answer **all** questions.

3. All necessary working and answers for each question done must be shown clearly.

4. Mathematical tables and non-programmable calculators may be used.

5. Cellular phones and any unauthorized materials are not allowed in the examination room.

6. Write your Name on every page of your answer sheet(s)

1. Use a non – programmable scientific calculator to evaluate each of the following Correct to three decimal places

1. Solve the system of equation below

2. Use a non – programmable scientific calculator to evaluate each of the following expression

(a). Given matrices and , then find

(i) AB

(ii)

(iii)

(b) Consider the frequency distribution table below

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Class mark | 15 | 25 | 35 | 45 | 55 | 65 | 75 | 85 | 95 |
| Cumulative frequency | 25 | 39 | 51 | 71 | 99 | 115 | 154 | 169 | 200 |

Find

1. Mean
2. Standard deviation

3. (a) If Find

(i)

(ii)

(b). By completing the square, find the turning point of and state whether it is a maximum or minimum

4. (a) A rational function defined by , find

(i) the asymptotes

(ii) the intercepts

(iii) the domain and range without sketching the graph

(b) The function is defined by

(i) Sketch the graph

(ii) State the domain and range of

5 (a) If the product of three terms of G. P is 512. If 8 added to the first term and 6 added to second term it form an A.P . Find the three terms of G. P .

(b) The ration of quantities A and B is 2 : 5 . If A increases by 40% and B increases by 30% . Find the new ratio

(c) varies directly as the square of and inversely as the cube root of . If is 24 when is 8 and is 4. Find the value of when is 27 and is 9.

6. (a) Solve the following equation for the value of abd

(b) What percentage rate of compound interest per annum will Tsh. 600,000 amount to Tsh. 800,000 in 5 years, if the interest is calculated half yearly?

7. (a) Use the first principle of differentiation, find

(b) Find of

8. (a) The first derivative of the function Find and numerical value of

(b) Evaluate

(c) Revolve the region under the curve on the interval about the and find the volume of the resulting of solid revolution

9. Find the mean, median and mode of the following distribution table

|  |  |
| --- | --- |
| Class interval | Frequency |
| 0.1 – 0.4 | 3 |
| 0.5 – 0.8 | 4 |
| 0.9 – 1.2 | 7 |
| 1.3 – 1.6 | 5 |
| 1.7 – 2.0 | 8 |
| 2.1 – 2.4 | 3 |

10. (a) Find the inter-quartile range of the following numbers

12, 5, 22, 30, 7, 36, 14, 42, 15, 53 and 25

(b) Prepare the frequency distribution table for the following marks. Use the class mark interval 5.5, 15.5, 25.5

25 31 28 11 18 12 15 37 42 48 34 13 15 32 16 34 14 34 28 41 17

From the distribution table, find

1. Mean by coding method (ASSUMED MEAN = 15.5)
2. 35th percentile.