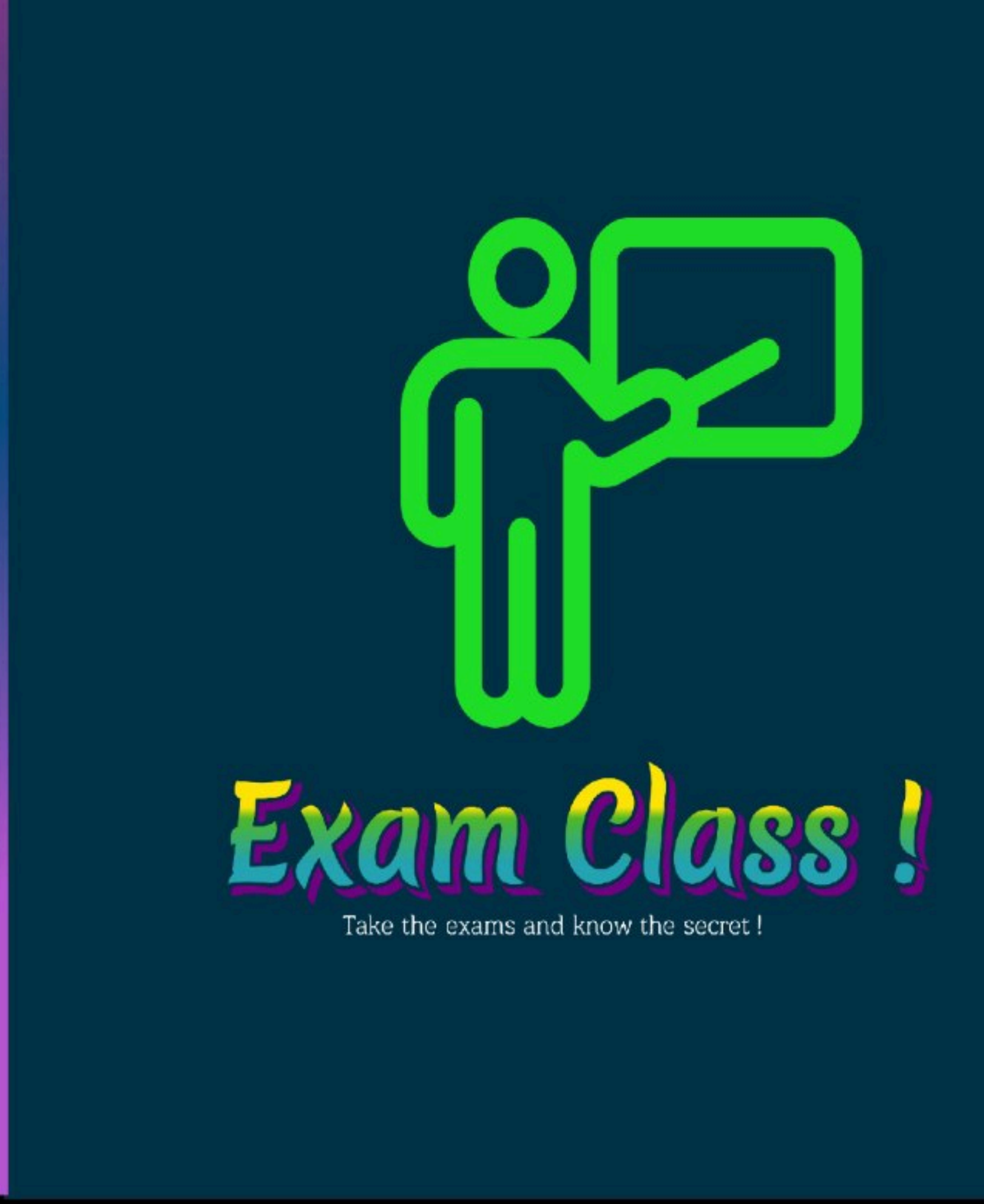




በ Exam Class ከ ቀለሜ ቻናል ጋር በመተባበር የተዘጋጀ !

(b) adj(A) **[4pts.]**

(c) A^{-1} **[2pts.]**

16. Apply **Cramer's Rule** to solve the system of linear equations **[5pts.]**

$$\begin{aligned} x + 2y - z &= 2 \\ 3x \qquad - z &= 0 \\ -3y + 2z &= 0. \end{aligned}$$

University College of Math
SPARK 4

Bahir Dar University
College of Science
Mathematics for Social Sciences(Math 1011)
Final Examination (50%)

Final Exam, Form: D

Name: _____
ID: _____
Department: _____
Section: _____
Date: 21/02/22 **Time Allowed:** $2\frac{1}{2}$hrs

Part I. Multiple Choice Questions (10%)

Instruction: Encircle the correct answer from the given alternatives.(2 pts each.)

1. Let $A = \{a, b, c\}$ and $B = \{1, 2, 3\}$ be sets. Which of the following is **Not** a function from A to B ?
   (a) $\{(a,1),(b,2),(a,3)\}$.
   (b) $\{(a,2),(b,3),(c,1)\}$.
   (c) $\{(a,1),(b,1),(c,1)\}$.
   (d) $\{(a,3),(b,2),(c,1)\}$.
2. Which of the following function is one to one from $\mathbb{R}$ to $\mathbb{R}$?
   (a) $f(x) = x^2 + 1$
   (b) $f(x) = x^3 + 1$
   (c) $f(x) = x^4 - x^2 + 1$
   (d) $f(x) = \frac{1}{x^2+4}$
3. For two invertible matrices A and B of order n. Which one of the following is **True**?
   (a) $\det(A + B) = \det(A) + \det(B)$
   (b) $\det(AB) = \frac{\det(A)}{\det(B)}$
   (c) $\det(A^T) = \det(A)$
   (d) $\det(A^{-1}) = \det(A)$
4. If the function $p(x) = 2x^7 - 9x^4 + 3x^3 - 12x + 20$ is divided by $x + 1$, then the remainder is
   (a) 20
   (b) 22
   (c) 18
   (d) 24
5. The domain of the function $f(x) = \ln(x - 4) + 2\ln x$ is
   (a) $(-\infty, 4)$
   (b) $(0, \infty)$
   (c) $(0, 4)$
   (d) $(4, \infty)$

SPARK4

Part II. Short Answer Questions (16%)

Instruction: Write the most simplified answer on the space provided. (2pts each)

6. The rational zeros of $p(x) = x^4 + 3x^3 + 2x^2 - 6x - 8$ are _____.

7. Suppose A and B are 3×3 matrices such that $\det(A) = 4$ and $\det(B) = 5$, then $\det(3A^{-1}B^T)$ is _____.

8. If -1, 1 and 2 are roots of the polynomial $p(x)$ and $p(3) = 8$, then $p(x) =$ _____

9. The inverse of the function $f(x) = 2x + 8$ is _____.

10. The solution set of the logarithmic equation $\log_2(x^2 - 4) = 4$ is _____

11. If $f(x) = 2x^2 + 10$ and $g(x) = \sqrt{x+4}$, then

    (a) Domain of $f \circ g =$ _____.

    (b) $(f \circ g)(x) =$ _____.

12. For what value(s) of x is the matrix $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & x & 2 \\ 0 & 3 & 2x \end{bmatrix}$ invertible= _____ .

Part III. Workout Problems (24%)

Show all the necessary steps clearly on the space provided.

13. Determine the solution set of the equation **[4pts.]**

$$3^{2x} - 3^x - 6 = 0$$

SPARK4

15. Given matrix $A = \begin{bmatrix} 1 & 2 & 0 \\ -1 & 4 & 3 \\ 0 & 2 & 2 \end{bmatrix}$. Then find

(a) $\det(A)$ **[1pt.]**

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