

Student Name (ARABIC):

Student ID:

Instructor Name:

CRN:

Instructions:

This exam duration is **1 hour**.

This is NOT an open book exam.

The use of calculators is permitted.

The use of mobile phones is NOT permitted.

Please answer all the **5** questions.

The number of pages are **4 pages** including this page.

Marking Scheme:

Question	Score
1 (5 Marks)	
2 (5 Marks)	
3 (4 Marks)	
4 (4 Marks)	
5 (2 Marks)	
TOTAL	

Question 1: (5 points)

Choose the correct answer, write your answer in the table below:

1. Which of the following is not a true statement :

- a) $-7 < -7$ b) $-7 \geq -7$ c) $-7 = -7$ d) $-7 \leq -7$

2. The slope of the vertical line is :

- a) 0 b) 1 c) -1 d) Not defined

3. $LCM(x^2 - 25, (x+5)^2) =$ is:

- a) $(x^2 - 25)(x+5)^2$ b) $x+5$ c) $(x+5)^2(x-5)$ d) $(x-5)(x+5)$

4. The solution set for the equation $x^2 = -9$:

- a) $\{-3, 3\}$ b) ϕ c) $\{-9, 9\}$ d) $\{-81, 81\}$

5. The result of $(3x^3y^2)^3$ is:

- a) $9x^6y^5$ b) $27x^3y^2$ c) $3x^9y^6$ d) $27x^9y^6$

Question	1	2	3	4	5
Answer	A	D	C	B	D

Question 2: (5 points)

Determine whether each statement is true or false:

1. The product of a number and its multiplicative inverse is -1 **F**.....
2. For any real number n , $n \geq n$ **T**.....
3. The x - intercept of $Ax + By = C$, $C \neq 0$ is $(\frac{A}{C}, 0)$ **F**.....
4. $(x + y)^2 = x^2 + y^2$ **F**....
5. If the principle of zero products is to be used, one side of the equation must be 0 ...**T**..

Question 3: (4 points)

1. Factor completely $y^4 - 16$

Sol:

$$\begin{aligned}y^4 - 16 &= (y^2 - 4)(y^2 + 4) \\ &= (y - 2)(y + 2)(y^2 + 4)\end{aligned}$$

2. Perform and simplify: $\frac{a^2 + 2a - 8}{a^2} \div \frac{a^2 + a - 12}{a^2 - 3a}$

Sol:

$$\begin{aligned}\frac{a^2 + 2a - 8}{a^2} \div \frac{a^2 + a - 12}{a^2 - 3a} &= \frac{a^2 + 2a - 8}{a^2} \times \frac{a^2 - 3a}{a^2 + a - 12} \\ &= \frac{(a+4)(a-2)}{a \times a} \times \frac{a(a-3)}{(a+4)(a-3)} = \frac{a-2}{a}\end{aligned}$$

Question 4: (4 points)

Solve the following Equation and Inequality:

1. $3x^2 - 4x = 15$

Sol:

$$3x^2 - 4x - 15 = 0$$

$$(3x + 5)(x - 3) = 0$$

$$3x + 5 = 0$$

$$x - 3 = 0$$

$$x = -\frac{5}{3}$$

$$x = 3$$

$$\text{Solution Set} = \left\{-\frac{5}{3}, 3\right\}$$

2. $\frac{x}{10} + \frac{4x}{15} \geq x - 1$

Sol:

$$30\left(\frac{x}{10} + \frac{4x}{15} \geq x - 1\right)$$

$$3x + 8x \geq 30x - 30$$

$$-19x \geq -30$$

$$x \leq \frac{30}{19}$$

Question 5: (2 points)

Graph the equation using the intercepts $y = 3x - 6$

Sol:

x-intercept (2, 0)

y-intercept (0, -6)

