# Linear Equations and Inequalities
# Unit No. 5 Test # 1

Time: 30 Minutes Total Marks: 20

## Part A: Multiple Choice Questions (1 mark each)

Q1. Which of the following represents an inequality?

- (a) $2x + 3 = 5$
- (b) $3x - 2 > 6$
- (c) $x + 2 = 4$
- (d) $x = 1$

Q2. Which operation affects the inequality sign?

- (a) Add 1
- (b) Multiply by -1
- (c) Subtract 2
- (d) Divide by 4

Q3. Objective function is used to:

- (a) multiply equations
- (b) minimize or maximize output
- (c) divide constraints
- (d) eliminate variables

Q4. The inequality $x \geq 0$ represents:

- (a) Left side of x-axis
- (b) Right side of x-axis
- (c) Entire x-axis
- (d) Negative values of x

Q5. A feasible region is:

- (a) always unbounded
- (b) always in 3D
- (c) solution to inequalities
- (d) irrelevant to graphing

## Part B: Short Questions (2 marks each)

Q1. Define a linear equation in one variable.

Q2. Solve and plot: $x - 2y \geq 4$

Q3. Graph: $x + y \leq 4$

Q4. Solve: $3x + 4 = 2x + 9$

Q5. Simplify: $5(x - 1) + 3$

## Part C: Long Question (5 marks)

Q1. Maximize $f(x, y) = 2x + 3y$ subject to constraints: $2x + y \leq 8$; $x + 2y \leq 14$; $x \geq 0$; $y \geq 0$.

# Linear Equations and Inequalities
# Unit No. 5 Test # 2

Time: 30 Minutes Total Marks: 20

## Part A: Multiple Choice Questions (1 mark each)

Q1. Solution of 5x - 10 = 10 is:

- (a) 0
- (b) 50
- (c) 4
- (d) -4

Q2. Which of these is NOT a linear equation?

- (a) x + y = 7
- (b) 2x^2 + 3 = 0
- (c) 3x - 5 = 2
- (d) x - y = 0

Q3. In x + y = 3, the y-intercept is:

- (a) 0
- (b) 3
- (c) -3
- (d) None of these

Q4. In the inequality y > 2x, the region lies:

- (a) below line
- (b) above line
- (c) on x-axis
- (d) on y-axis

Q5. Linear equations have variables with power:

- (a) 0
- (b) 1
- (c) 2
- (d) 3

## Part B: Short Questions (2 marks each)

Q1. Define linear inequality and list its types.

Q2. Solve: $x/2 + 1 = 3$

Q3. Find x: $6x + 3 = 3x + 9$

Q4. Solve and graph: $x - y \geq 1$

Q5. Solve: $2x - 5 = 7$

## Part C: Long Question (5 marks)

Q1. Minimize $z = 3x + y$ subject to: $3x + 5y \geq 15$; $x + 6y \geq 9$; $x \geq 0$; $y \geq 0$.

# Linear Equations and Inequalities
# Unit No. 5 Test # 3

Time: 30 Minutes Total Marks: 20

## Part A: Multiple Choice Questions (1 mark each)

Q1. Which symbol means 'less than or equal to'?

- (a) <
- (b) >
- (c) ≤
- (d) ≥

Q2. x + 2y = 6 is a:

- (a) linear equation
- (b) quadratic equation
- (c) inequality
- (d) function

Q3. In the following, which is a linear equation?

- (a) 5x > 7
- (b) 4x - 2 < 1
- (c) 2x + 1 = 1
- (d) 4 = 1 + 3

Q4. The equation formed from a linear inequality is called:

- (a) linear equation
- (b) associated equation
- (c) quadratic equation
- (d) none of these

Q5. Feasible solution lies:

- (a) in origin
- (b) in first quadrant
- (c) in second quadrant
- (d) none

## Part B: Short Questions (2 marks each)

Q1. What is a feasible region in linear inequalities?

Q2. Graph: $2x + y \leq 6$

Q3. Graph the inequality: $y < 3x + 2$

Q4. Solve: $4(x - 2) = 2x + 6$

Q5. Plot solution: $x \geq 0$ and $y \geq 0$

## Part C: Long Question (5 marks)

Q1. Maximize $f(x, y) = x + 4y$ subject to: $x + y \leq 4$; $x \geq 0$; $y \geq 0$.

# Linear Equations and Inequalities
# Unit No. 5 Test # 4

Time: 30 Minutes Total Marks: 20

## Part A: Multiple Choice Questions (1 mark each)

Q1. $x - 5 < 10$ becomes:

- (a) $x < 15$
- (b) $x > 15$
- (c) $x < 5$
- (d) $x = 5$

Q2. The function to be optimized is called:

- (a) feasible function
- (b) region function
- (c) objective function
- (d) inequality function

Q3. Solution of $x/2 = 4$ is:

- (a) 2
- (b) 4
- (c) 6
- (d) 8

Q4. A vertical line divides the plane into:

- (a) left half plane
- (b) right half plane
- (c) full plane
- (d) two half planes

Q5. When graphing $2x + y = 6$, the intercepts are:

- (a) (3,0) and (0,6)
- (b) (0,3) and (6,0)
- (c) (0,6) and (0,3)
- (d) (0,0) and (1,1)

## Part B: Short Questions (2 marks each)

Q1. Define an objective function.

Q2. Find x if $3x - 4 = 2x + 5$

Q3. Simplify: $4(x + 2) - 3x$

Q4. Solve: $3(x - 1) = x + 5$

Q5. Solve and plot: $x + 3 < 7$

## Part C: Long Question (5 marks)

Q1. Minimize $f(x, y) = 3x + 5y$ subject to: $x + 3y \geq 3$; $x + y \geq 2$; $x \geq 0$; $y \geq 0$.

# Linear Equations and Inequalities
# Unit No. 5 Test # 5

Time: 30 Minutes Total Marks: 20

## Part A: Multiple Choice Questions (1 mark each)

Q1. What is the solution of x - 3 = 2?

- (a) 1
- (b) 5
- (c) -1
- (d) 6

Q2. Corner point is also called:

- (a) code
- (b) vertex
- (c) curve
- (d) region

Q3. The graph of a linear inequality is:

- (a) A curve
- (b) A shaded region
- (c) A point
- (d) A bar

Q4. $x + 5 > 10$ implies:

- (a) $x > 5$
- (b) $x < 5$
- (c) $x = 5$
- (d) $x \leq 5$

Q5. To test a region in inequality graphing, we use:

- (a) a compass
- (b) a protractor
- (c) a test point
- (d) a vertex

## Part B: Short Questions (2 marks each)

Q1. What is meant by a solution of a linear inequality?

Q2. Solve: $x + 2 = 2x - 5$

Q3. Simplify: $2(x + 3) - x$

Q4. Simplify: $3(x + 1) - 2(x - 2)$

Q5. Graph: $x - 3y < 6$

## Part C: Long Question (5 marks)

Q1. Maximize $f(x, y) = 2x + 5y$ subject to: $2y - x \leq 8$; $x - y \leq 4$; $x \geq 0$; $y \geq 0$.