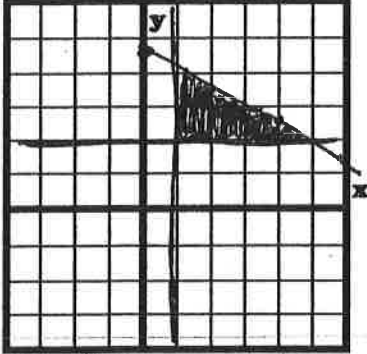


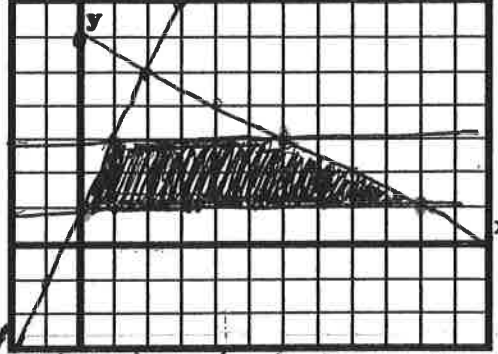
Graph each system of inequalities. Name the coordinates of the vertices of the feasible region. Find the maximum and minimum values of the given function for this region.

1)  $y \geq 2$   $Min = -10$   
 $x \geq 1$   $Max = 4$   
 $x + 2y \leq 9$   $y \leq -\frac{1}{2}x + 4.5$   
 $f(x, y) = 2x - 3y$



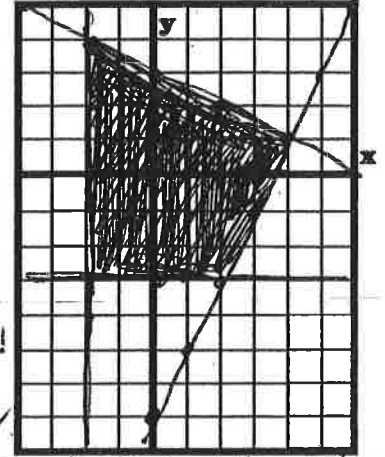
$(1, 2) = 4$   $(1, 4) = -10$   $(5, 2) = 4$

2)  $y \leq 2x + 1$   $Min = 1$   
 $1 \leq y \leq 3$   $Max = 31$   
 $x + 2y \leq 12$   $y \leq -\frac{1}{2}x + 6$   
 $f(x, y) = 3x + y$



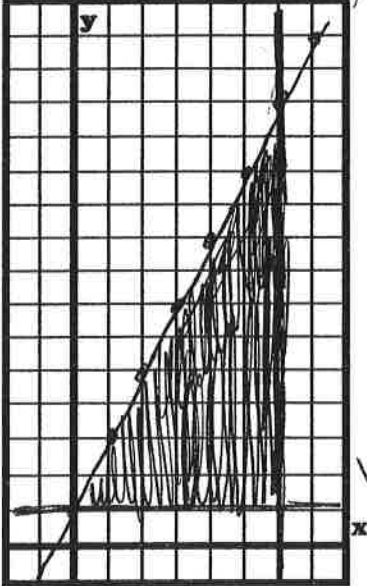
$(0, 1) = 1$   $(1, 3) = 4$   $(6, 3) = 21$   $(10, 1) = 31$

3)  $x + 2y \leq 6$   $y \leq -\frac{1}{2}x + 3$   
 $2x - y \leq 7$   $y \geq 2x - 7$   
 $x \geq -2$   $Min = -6$   
 $y \geq -3$   $Max = 5$   
 $f(x, y) = x \cdot y$



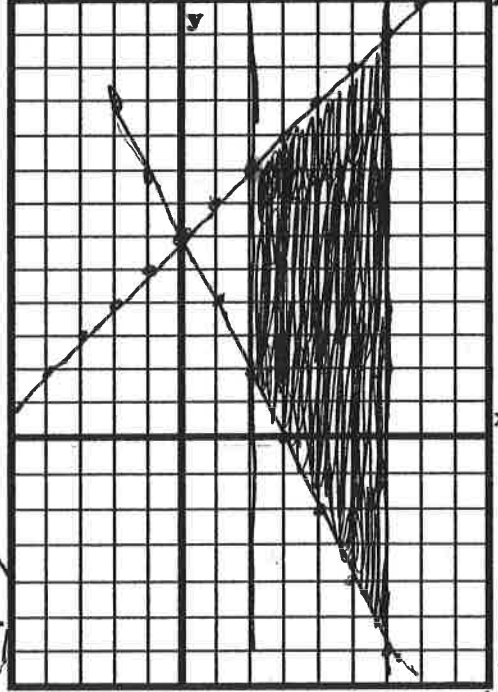
$(-2, -3) = 1$   $(-2, 4) = -6$   $(4, 1) = 3$

4)  $y \geq 1$   
 $x \leq 6$   $Min = 1$   
 $y \leq 2x + 1$   $Max = 19$   
 $f(x, y) = x + y$



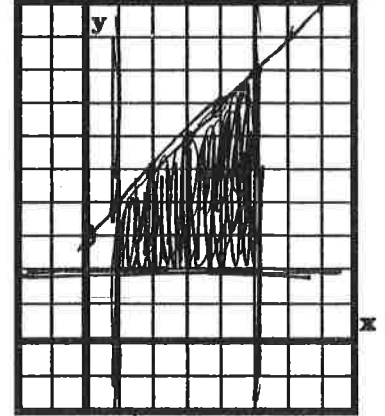
$(0, 1) = 1$   $(6, 13) = 19$   $(6, 1) = 7$

5)  $y \leq x + 6$   
 $y + 2x \geq 6$   $y \geq -2x + 6$   
 $2 \leq x \leq 6$   $Min = -24$   
 $f(x, y) = -x + 3y$   $MAX = 30$



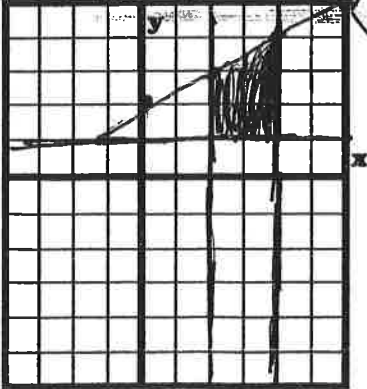
$(6, -6) = -24$   $(6, 12) = 30$   $(2, 2) = 4$   $(2, 8) = 22$

6)  $y \geq 2$   
 $1 \leq x \leq 5$   $Min = -5$   
 $y \leq x + 3$   $MAX = 11$   
 $f(x, y) = 3x - 2y$

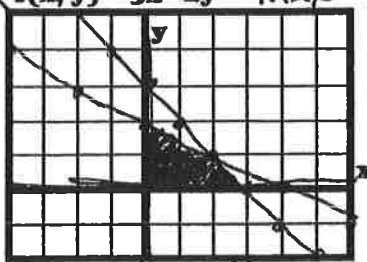


$(1, 2) = -1$   $(1, 4) = -5$   $(5, 2) = 11$   $(5, 8) = -1$

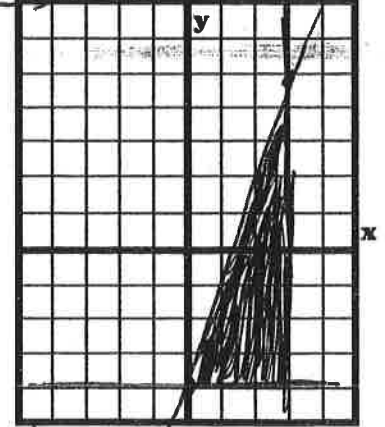
7)  $y \geq 1$   
 $2 \leq x \leq 4$   $Min = 5$   $Max = 16$   
 $x - 2y \geq -4$   $y \leq \frac{1}{2}x + 2$   
 $f(x, y) = 3y + x$



8)  $x + y \leq 3$   $y \leq -x + 3$   
 $x + 2y \leq 4$   $y \leq -\frac{1}{2}x + 2$   
 $x \geq 0$   $Min = -4$   
 $y \geq 0$   $Max = 15$   
 $f(x, y) = 5x - 2y$



9)  $y \geq -4$   
 $x \leq 3$   $Min = -2$   
 $y \leq 3x - 4$   $Max = 7$   
 $f(x, y) = x \cdot y$



$(2, 1) = 5$   $(4, 1) = 7$   $(4, 4) = 16$   $(0, 0) = 0$   $(0, 2) = 0$   $(3, 0) = 15$   $(2, 1) = 8$   $(0, -4) = -4$   $(3, -4) = -7$   $(3, 5) = -15$