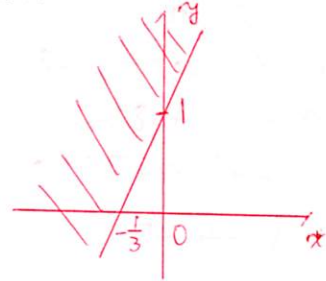


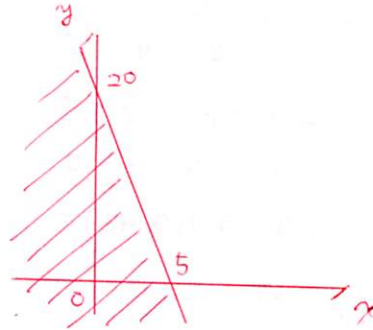
経済数学入門 第6回 練習問題

Ex. 1 次の不等式が示す領域をグラフに描け.

1. $y > 3x + 1$

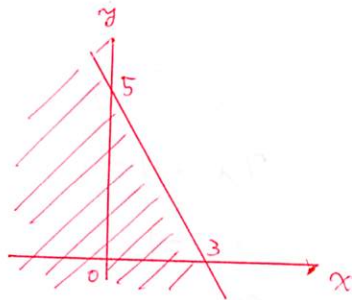


2. $y \leq -4x + 20$



3. $5x + 3y < 15$

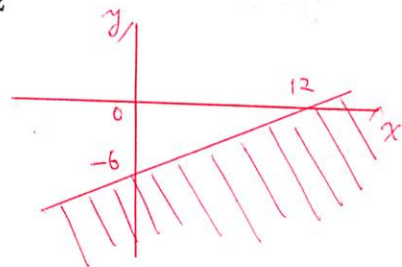
$y < -\frac{5}{3}x + 5$



4. $3x - 2y \geq 2x + 12$

$-2y \geq -x + 12$

$y \leq \frac{1}{2}x - 6$

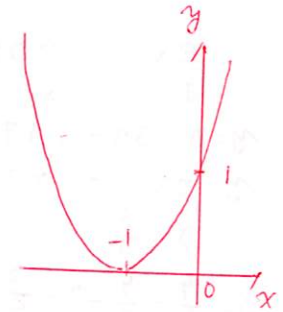


Ex. 2 次の2次関数の示すグラフを描け.

1. $y = x^2 + 2x + 1$

$y' = 2x + 2 = 0$ とおくと
 $x = -1$

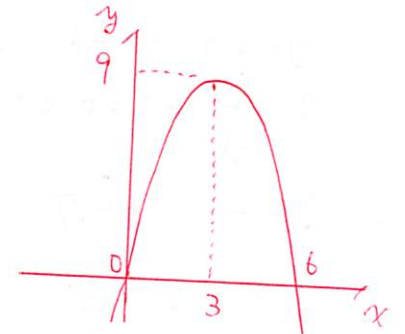
$y = 1 - 2 + 1 = 0$



2. $y = -x^2 + 6x$

$y' = -2x + 6 = 0$ とおくと
 $x = 3$

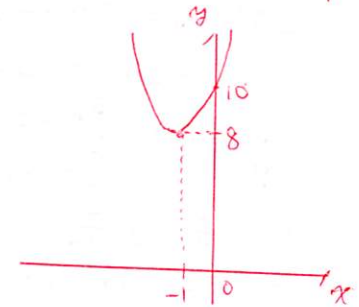
$y = -9 + 18 = 9$



3. $y = 2x^2 + 4x + 10$

$y' = 4x + 4 = 0$ とおくと
 $x = -1$

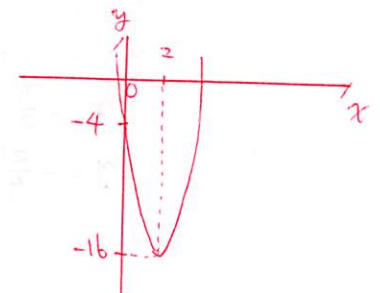
$y = 2 - 4 + 10 = 8$



4. $y = 3x^2 - 12x - 4$

$y' = 6x - 12 = 0$ とおくと
 $x = 2$

$y = 12 - 24 - 4 = -16$



Ex. 3 次の2次不等式が示す領域をグラフに描け。

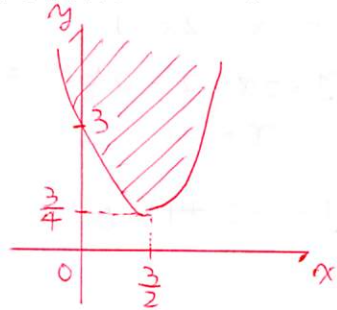
1. $y \geq x^2 - 3x + 3$

$y = x^2 - 3x + 3$ とする

$y' = 2x - 3 = 0$ とおくと

$x = \frac{3}{2}$

$y = \frac{9}{4} - \frac{9}{2} + 3 = \frac{3}{4}$



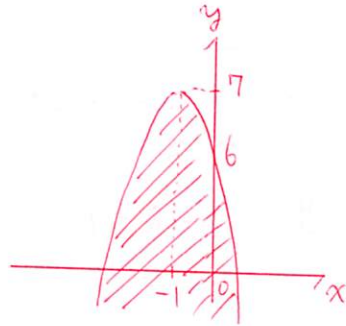
2. $y \leq -x^2 - 2x + 6$

$y = -x^2 - 2x + 6$ とする

$y' = -2x - 2 = 0$ とおくと

$x = -1$

$y = -1 + 2 + 6 = 7$



3. $2x^2 + 2y < -3x + 4$

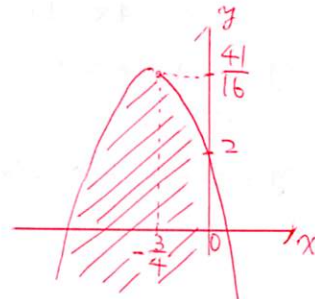
$2x^2 + 2y = -3x + 4$ とする

$2y = -2x^2 - 3x + 4$

$y = -x^2 - \frac{3}{2}x + 2$

$y' = -2x - \frac{3}{2} = 0$ とおくと

$x = -\frac{3}{4}$ $y = \frac{41}{16}$



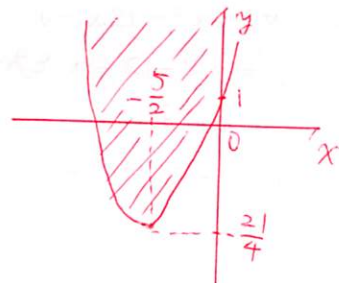
4. $x^2 + 5x + 1 \leq y$

$y = x^2 + 5x + 1$ とする

$y' = 2x + 5 = 0$ とおくと

$x = -\frac{5}{2}$

$y = -\frac{21}{4}$



Ex. 4 次の2つの関数の交点を求めよ。

1. $y = x^2 + 8x + 20$

$y = -3x - 8$

$x^2 + 8x + 20 = -3x - 8$

$x^2 + 11x + 28 = 0$

$(x+4)(x+7) = 0$

$x = -4, -7$

$x = -4$ のとき $y = -3(-4) - 8 = 4$

$x = -7$ のとき $y = -3(-7) - 8 = 13$

$(x, y) = (-4, 4), (-7, 13)$

2. $y = 2x^2 - 4x + 1$

$y = 2x + 9$

$2x^2 - 6x - 8 = 0$

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

$(x-4)(x+1) = 0$

$x = -1, 4$

$(x, y) = (-1, 7), (4, 17)$

3. $y = x^2 + 6x + 9$

$y = x^2 - x + 2$

$7x + 7 = 0$

$x = -1$

$y = 4$

$(x, y) = (-1, 4)$