

Systems of Inequalities

Section 8.7

(24) ① $3x - y \geq 6$
 ② $x + 2y \leq 2$

① $3x - y \geq 6$

$3x - y = 6$

x	y
0	-6
2	0

$0 \geq -6$

2 | 0 (solid line)

test point

(0, 0)

$3(0) - 0 \geq 6$

$0 \geq 6$

(no)

test point

(4, 0)

$3(4) - 0 \geq 6$

$12 \geq 6$

(yes)

② $x + 2y \leq 2$

$x + 2y = 2$

x	y
0	1
2	0

0 | 1

2 | 0

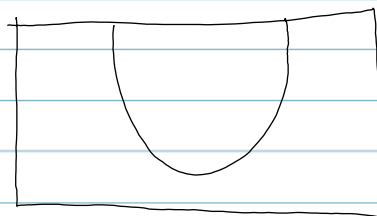
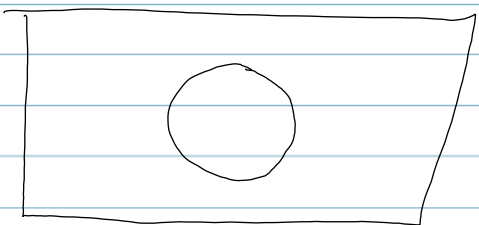
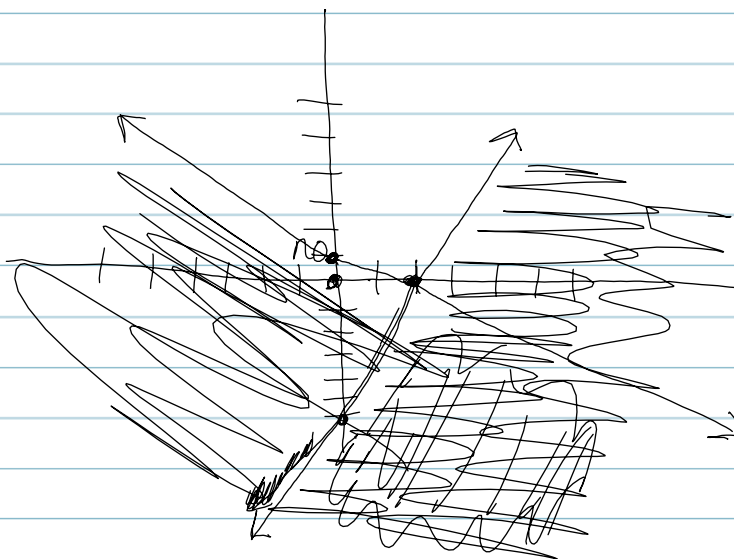
test point

(0, 0)

$0 + 2(0) \leq 2$

$0 \leq 2$

yes



(40) $x^2 + y^2 \leq 25$
 $y \leq x^2 - 5$



(circle)

$x^2 + y^2 = 25$

Center = (0, 0)

test (0, 0)

radius = $\sqrt{25} = 5$

$0^2 + 0^2 \leq 25$

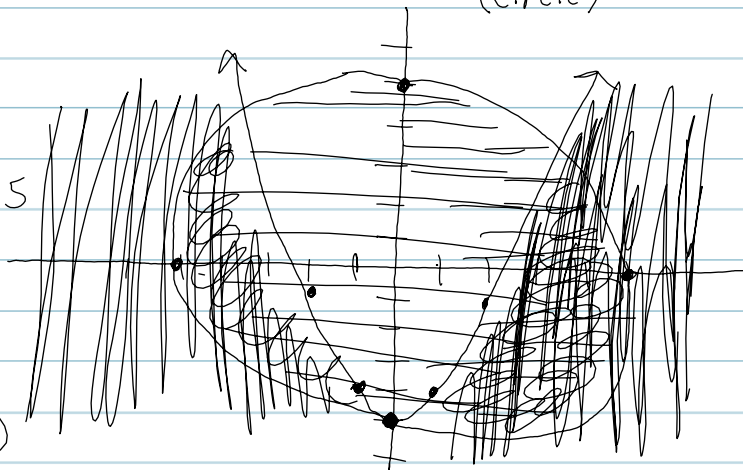
(yes)

test for parabola (0, 0)

$0 \leq 0^2 - 5$

$0 \leq -5$

(no)



$$y \leq x^2 - 5$$

$$y = x^2 - 5$$

Vertex: $(0, -5)$

$a=1$ up + neutral

x	y
-2	-1
-1	-4
0	-5
1	-4
2	-1