Homework 2

The following problems are similar to problems in the textbook (pages 29-32, 49-52), which have solutions (pages 33-42, 53-54). Feel free to look at those solutions if you need a hint. Don't hesitate to make discussion posts on Canvas or look up posts that are already made.

1. Graph the following relations:

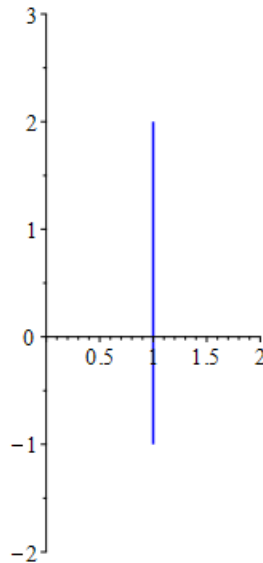   (a) $\{(x, y) \mid x = y, \ 1 \leq x \leq 2\}$,   (See solution below)
   (b) $\{(n, 2n - 1) \mid n = 0, \pm 1 \pm 2\}$,
   (c) $\{(x, y) \mid 0 \leq x < 2, \ y > 0\}$.

2. Describe the given relation using either the roster or set-builder method.
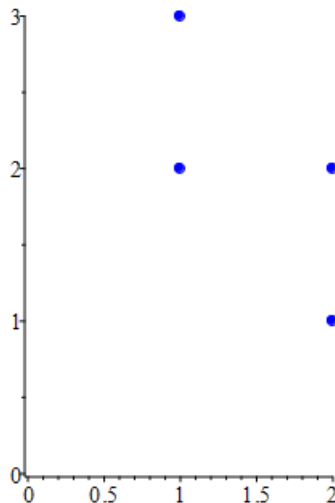
   (a) Figure 1

$\{(x, y) \mid x = 1, \ -1 \leq y \leq 2\}$

Problem 4(a):

y is not a function of x because

the graph doesn't pass the Vertical
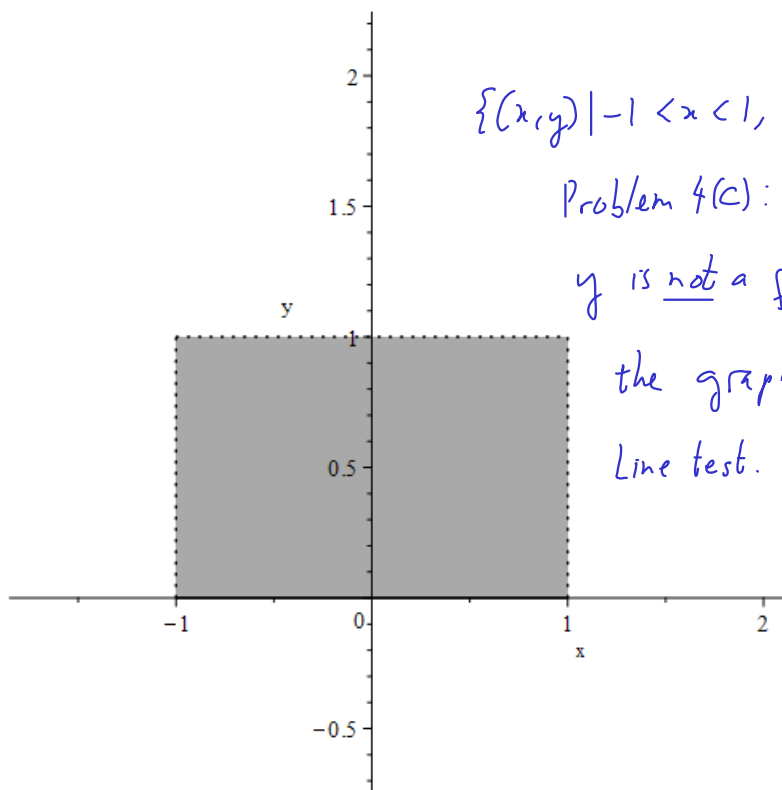
Line test.

   (b) Figure 2

$\{(1, 2), (1, 3), (2, 1), (2, 2)\}$

Problem 4(b):

y is not a function of x because

$x = 1$ corresponds to two values

of y: $y = 2$ and $y = 3$.

(c) Figure 3

$\{(x,y) \mid -1 < x < 1, 0 \le y < 1\}$

Problem 4(C):

y is not a function of x because

the graph doesn't pass the Vertical

Line test.

3. Graph the given equation by first making a table of a 10 values of x and 10 corresponding values y (with the help of a calculator), then plotting those points on the plane.

(a) $y = x^2 - x$
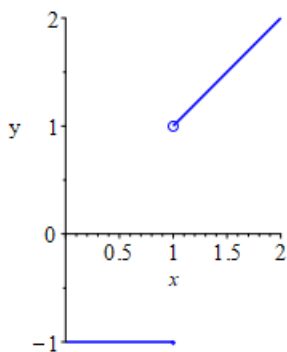
(b) $y = \sqrt{x+1}$

4. Determine whether or not the relation represents y as a function of x. Explain your answer.
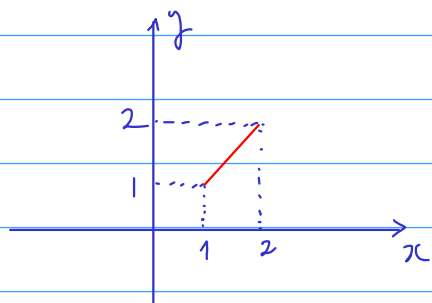
   (a) Figure 1 above

   (b) Figure 2 above

   (c) Figure 3 above

   (d) Figure 4 below

y is a function of x because

the graph passes the Vertical
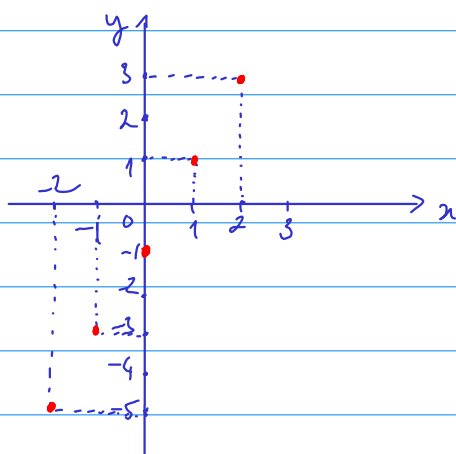
Line test.

1) (a) $\{(x,y) \mid x=y, \ 1 \le x \le 2\}$
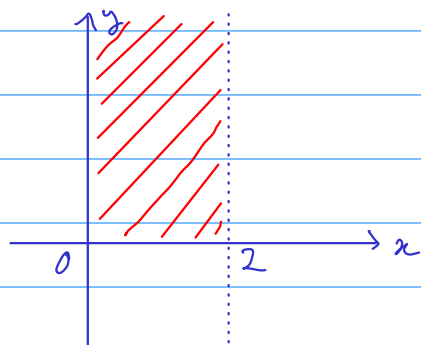

(b)

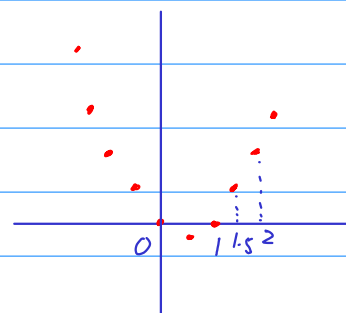$\{(n, 2n-1) \mid n = 0, \pm1, \pm2\} = \{(0,-1), (1,1), (-1,-3), (2,3), (-2,-5)\}$

(c) $\{(x,y) \mid 0 \le x < 2, \ y > 0\}$

3) (a) $y = x^2 - x$

x	0	0.5	-0.5	1	1.5	-1.5	-1	2	-2	2.5
y	0	-0.25	0.75	0	0.75	3.75	2	2	6	4.25

(b) $\quad y = \sqrt{x+1}$

x	0	-1	1	2	3	4	5	6	7	8
y	1	0	1.4	1.7	2	2.2	2.4	2.6	2.8	3