THE LINEAR FUNCTION $ax+by+c=0$

Gradient-intercept form of a straight line

$$y = mx + b$$

where m = gradient
b = y-intercept

General form of a straight line

$$ax+by+c=0$$

Note on Gradient

- positive gradient means line slopes to the RIGHT.

  e.g. / / —

- negative gradient means line slopes to the LEFT.

  e.g. \ \ —

Graphing Straight Lines

When graphing straight lines:

- label the axes, origin, and equation of each line.
- you must show the x- and y- intercepts (or at least two points on the line).

Domain: all real x (except lines parallel to y-axis)

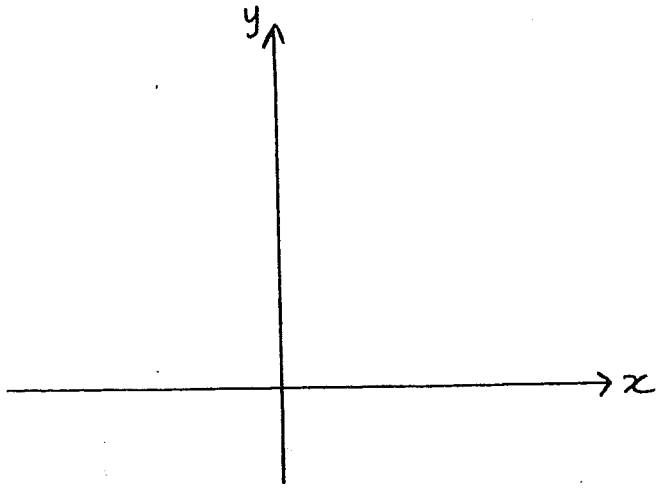
Range: all real y (except lines parallel to x-axis)

Examples:

① Sketch by completing the table of values.

$y = 2x+1$

x	0	1	2
y			



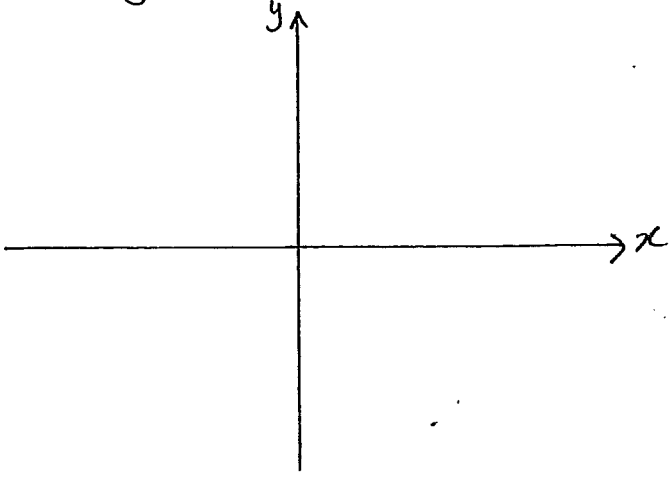
Function or Relation?

Domain:

Range:

② Sketch by using gradient and y-intercept.

a) $y = 3x - 2$



Function or Relation?

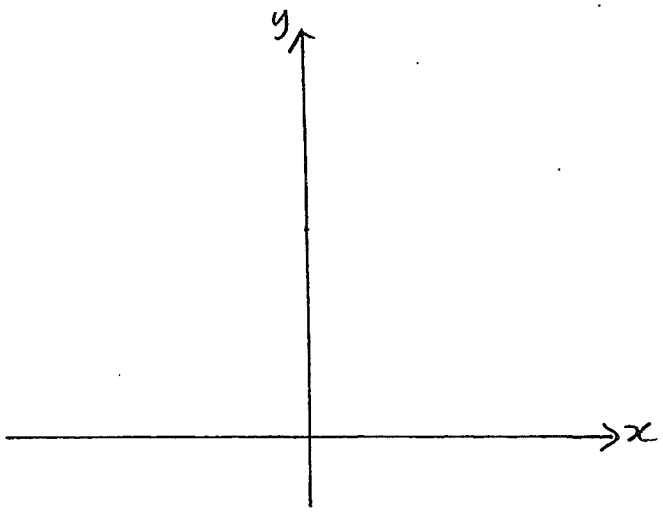
Domain:

Range:

THE LINEAR FUNCTION

Q2 cont'd

b) $2x + y - 4 = 0$



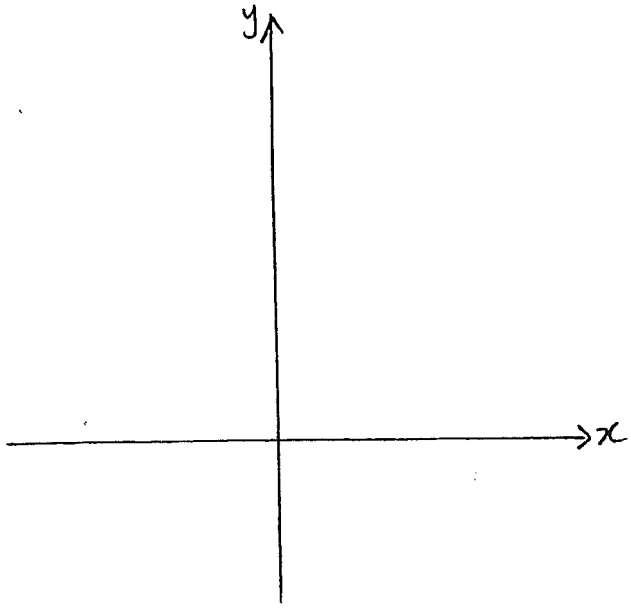
Function or relation?

Domain:

Range:

③ Sketch by finding the x- and y-intercepts.

a) $x + y = 4$

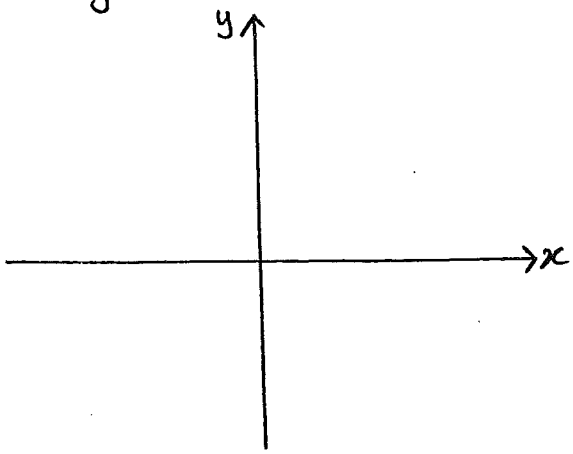


Function or relation?

Domain:

Range:

b) $y = 2x$

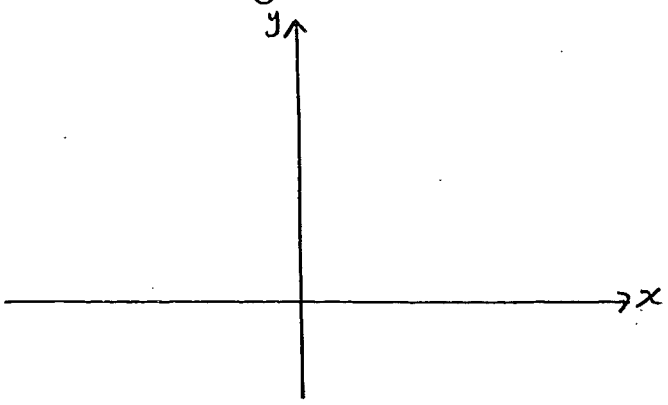


Function or relation?

Domain:

Range:

c) $2x - 3y + 9 = 0$

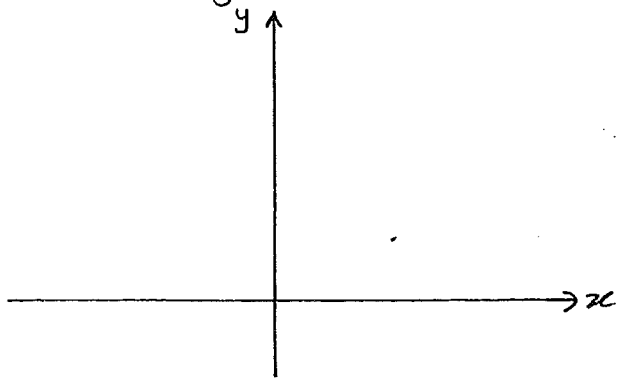


Function or relation?

Domain:

Range:

d) $x + 2y = 6$



Function or relation?

Domain:

Range:

THE LINEAR FUNCTION

Lines Parallel to the Axes

- Lines parallel to the y-axis are of the form:

  $x = a$ where a is where the line cuts the x-axis

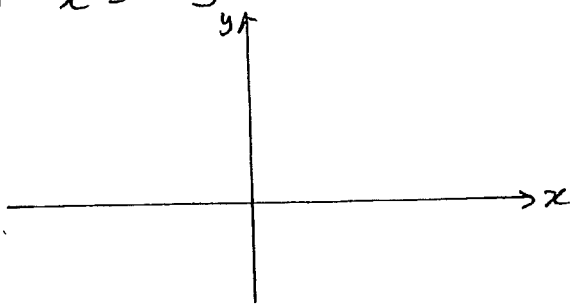
- Lines parallel to the x-axis are of the form:

  $y = b$ where b is where the line cuts the x-axis

Examples:

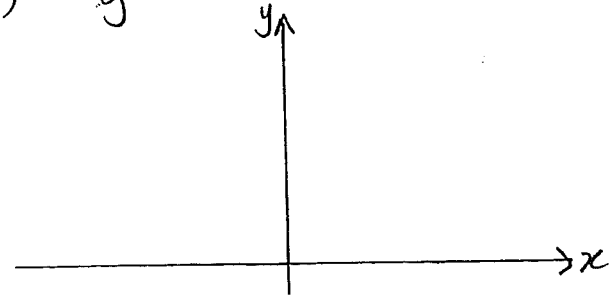
④ Sketch the following:

a) $x = -3$



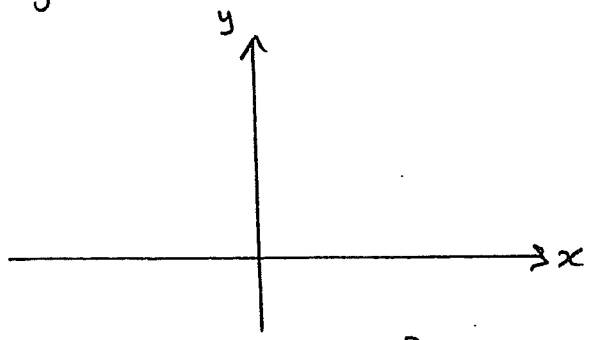
Function or Relation?
Domain:
Range:

b) $y = 4$



Function or
Domain:
Range:

c) $y = 0$



Function or relation?
Domain:
Range: