

Name: \_\_\_\_\_ Score: \_\_\_\_\_

Teacher: \_\_\_\_\_ Date: \_\_\_\_\_

## Relations and Functions

1- Which of the following relations are functions?

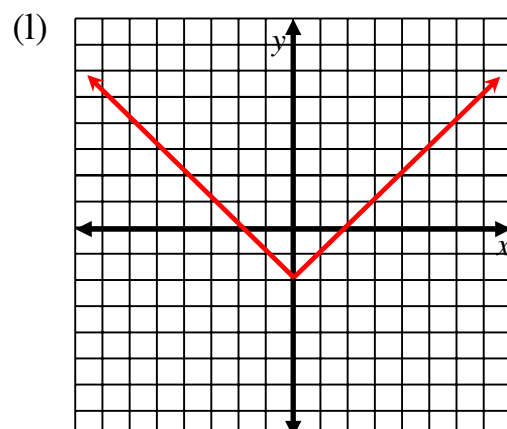
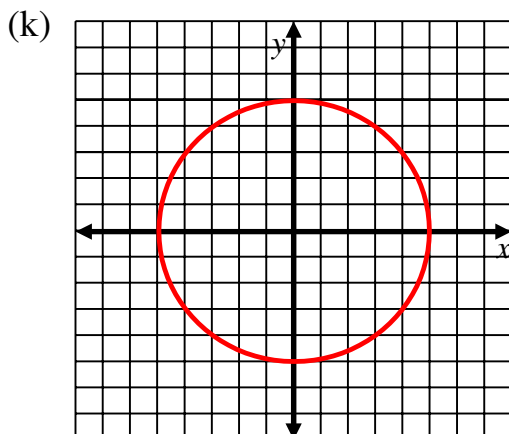
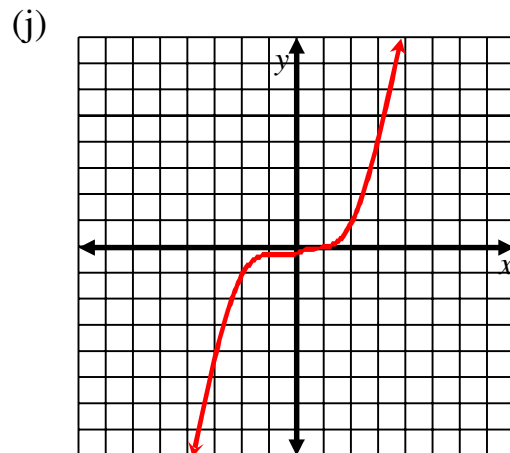
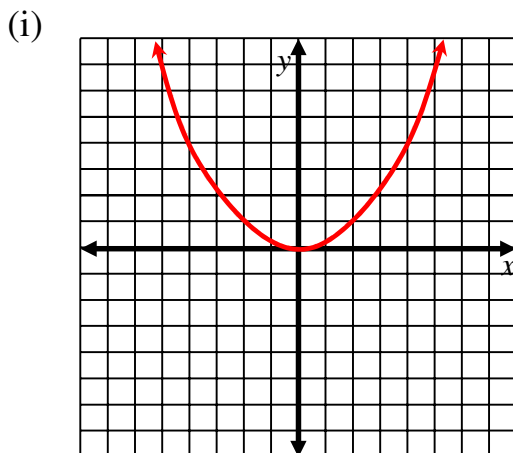
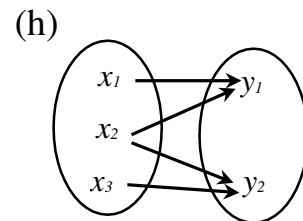
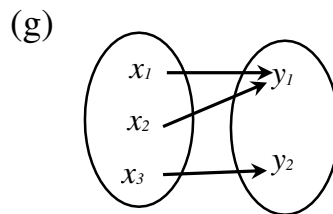
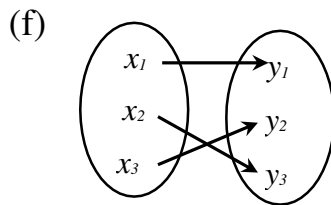
(a)  $\{(3, 4), (4, -6), (5, -7), (3, 2), (-2, 5)\}$

(b)  $\{(-4, 6), (-3, 2), (1, 0), (7, 6), (8, 2)\}$

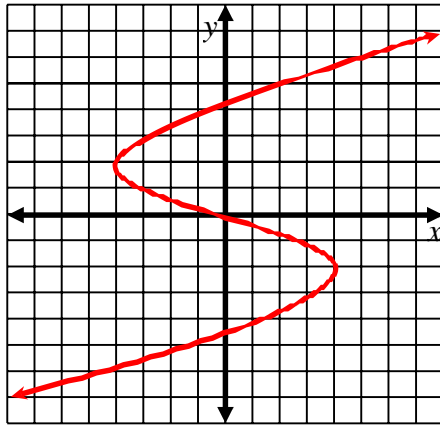
(c)  $\{(-3, 4), (-2, 5), (0, 0), (2, 5), (4, 8)\}$

(d)  $\{(-2, 1), (-2, 2), (-2, 3), (-2, 4), (-2, 5)\}$

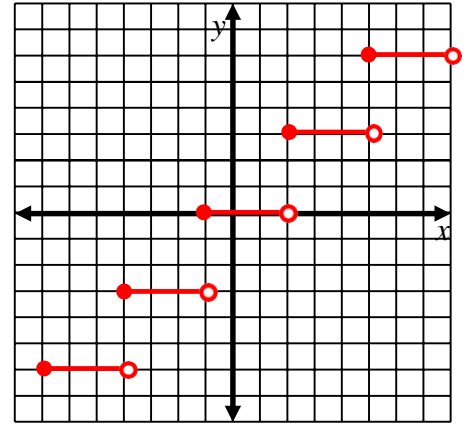
(e)  $\{(1, 3), (2, 3), (3, 3), (4, 3), (5, 3)\}$



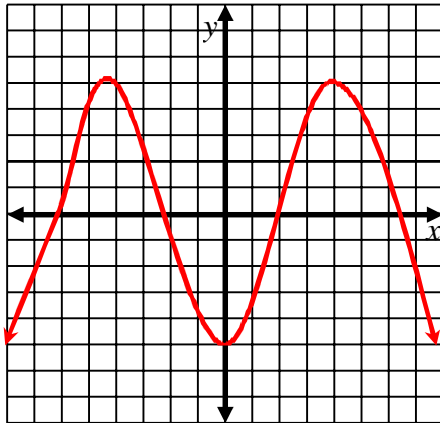
(m)



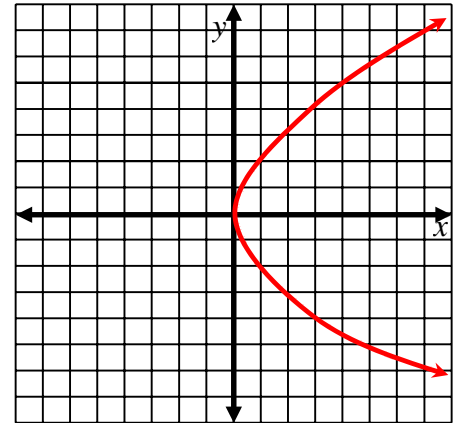
(n)



(o)



(p)



2- Use your GDC to sketch the following relations and determine if they are functions.

(a)  $y = x$

(b)  $y = 4$

(c)  $y = 3x - 5$

(d)  $x = 3$

(e)  $y = \sqrt{x}$

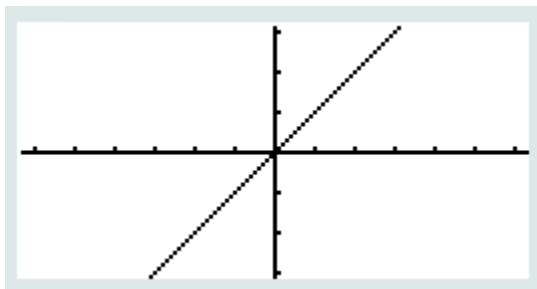
(f)  $y = x^2$

3- Determine the Domain and Range of all the relations in question 1

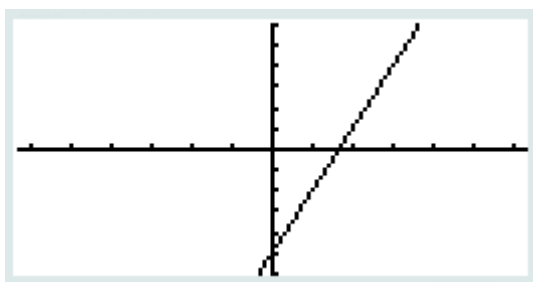
# Solutions

1- Functions are: b, c, e, f, g, i, j, l, n, o

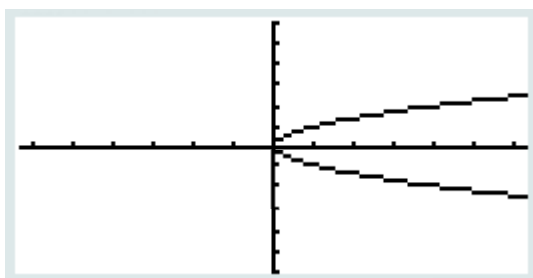
2- (a)



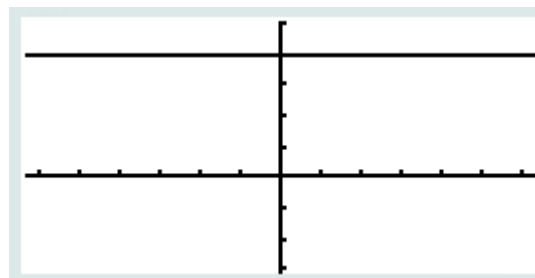
(c)



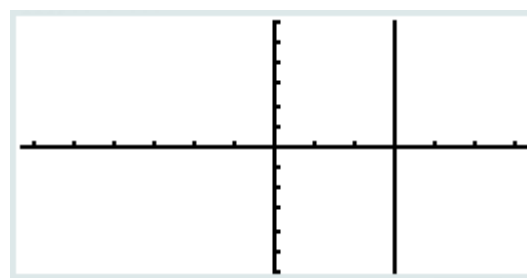
(e)



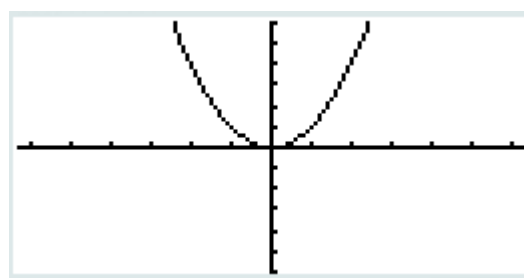
(b)



(d)



(f)



3-

	Domain	Range
(a)	$\{-2, 3, 4, 5\}$	$\{-7, -6, 2, 4, 5\}$
(b)	$\{-4, -3, 1, 7, 8\}$	$\{6, 2, 0\}$
(c)	$\{-3, -2, 0, 2, 4\}$	$\{4, 5, 0, 8\}$
(d)	$\{-2\}$	$\{1, 2, 3, 4, 5\}$
(e)	$\{1, 2, 3, 4, 5\}$	$\{3\}$
(f)	$\{x_1, x_2, x_3\}$	$\{y_1, y_2, y_3\}$
(g)	$\{x_1, x_2, x_3\}$	$\{y_1, y_2\}$
(i)	All Real numbers	Real numbers greater or equal to zero
(j)	All Real numbers	All Real numbers
(k)	Real numbers between -5 and 5	Real numbers between -5 and 5
(l)	All Real numbers	Real numbers greater or equal to -2
(m)	All Real numbers	All Real numbers
(n)	Real numbers between -7 and 8	$\{-6, -3, 0, 3, 6\}$
(o)	All Real numbers	Real numbers between -5 and 5