

# Functions

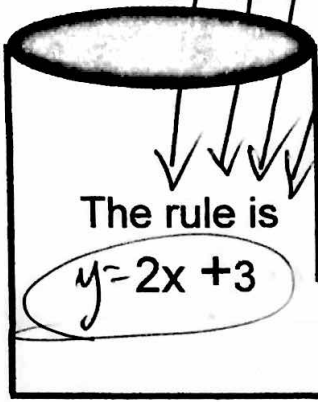
4th

A function can also be a rule with input values (the **DOMAIN**) and output values (the **RANGE**).

x-values  
input

y-values  
output

Domain:  $\{-1, 0, 1, 3\}$



$$y = 2(-1) + 3 = 1$$

$$y = 2(0) + 3 = 3$$

$$y = 2(1) + 3 = 5$$

$$y = 2(3) + 3 = 9$$

Range:  $\{1, 3, 5, 9\}$

Ordered pairs:  $\{(-1, 1), (0, 3), (1, 5), (3, 9)\}$

**FUNCTION NOTATION:**  $f(x) = 2x + 3$

said: "f of x"

To find  $f(-1)$  you replace  $x$  with  $-1$

$f(x)$  is the same thing as  $y$

Plug (-1) in for x

$$f(-1) = 2(-1) + 3$$

$$f(-1) = 1$$

Find the range values of each function for the given domain values.

a)  $f(x) = x^2 - 3$      $D = \{-2, 0, 2, 4\}$

input

$$y = (-2)^2 - 3 = 1$$

$$y = (0)^2 - 3 = -3$$

$$y = (2)^2 - 3 = 1$$

$$y = (4)^2 - 3 = 13$$

$$R = \{1, -3, 1, 13\}$$

output

Non-Linear

b)  $f(x) = -2x - 4$      $D = \{-4, -1, 2, 6\}$

$$y = -2(-4) - 4 = 4$$

$$y = -2(-1) - 4 = -2$$

$$y = -2(2) - 4 = -8$$

$$y = -2(6) - 4 = -16$$

$$R = \{4, -2, -8, -16\}$$

Linear

For  $f(x) = \{(-2,6), (2,8), (4,10), (6,12), (8,14)\}$ , find the indicated value.

$f(x)$

$f(6) = \underline{12}$

$f(-2) = \underline{6}$

$f(8) = \underline{14}$

if  $x=6$ , what is  $y$ ?

If  $f(x) = 2 - 3x$ ,  $f(-2) = \underline{8}$   
evaluate when  $x = -2$

Linear

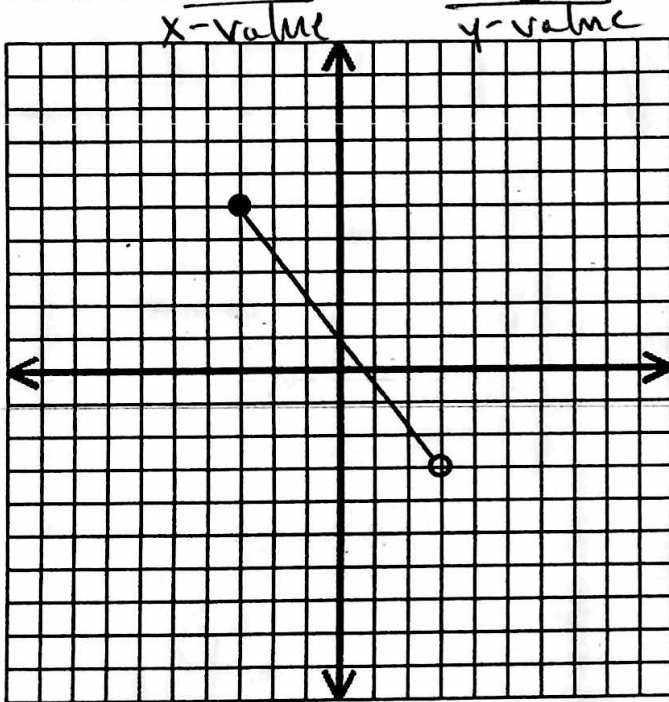
$f(-2) = 2 - 3(-2) = 8$

If  $f(x) = 2x^2 - 1$ ,  $f(5) = \underline{49}$   
evaluate when  $x = 5$

Non-Linear

$f(5) = 2(5)^2 - 1 = 49$

Find the domain and range.



Domain: \_\_\_\_\_

Range: \_\_\_\_\_