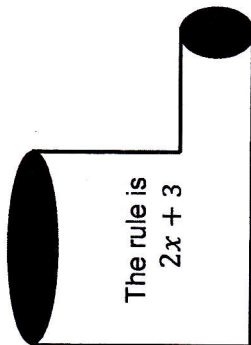## 4.2 – Functions #1

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

1. Domain: $-1, 0, 1$

The rule is
$2x + 3$

$2(-1)+3 = -2+3 = 1$
$2(0)+3 = 0+3 = 3$
$2(1)+3 = 2+3 = 5$

Range: $1, 3, 5$

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

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

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

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

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

a) $f(x) = x^2 - 3$ $D = \{-2, 0, 2, 4\}$ $R = \{1, -3, 13\}$

$f(-2) = (-2)^2 - 3 = 4-3 = 1$
$f(0) = (0)^2 - 3 = 0-3 = -3$
$f(2) = (2)^2 - 3 = 4-3 = 1$
$f(4) = (4)^2 - 3 = 16-3 = 13$

b) $g(x) = -2x - 4$ $D = \{-4, -1, 2, 6\}$ $R = \{4, -2, -8, -16\}$

$g(-4) = -2(-4)-4 = 8-4 = 4$
$g(-1) = -2(-1)-4 = 2-4 = -2$
$g(2) = -2(2)-4 = -4-4 = -8$
$g(6) = -2(6)-4 = -12-4 = -16$

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

$h(6) = \underline{12}$ $h(-2) = \underline{6}$ $h(8) = \underline{14}$

If $f(x) = 2 - 3x$ and $g(x) = 2x^2 - 1$, find the following.
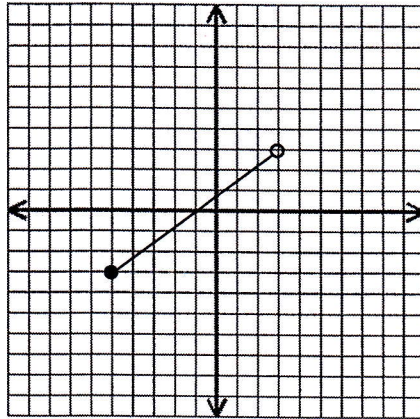
4. $f(-2) = 2-3(-2)$
$= 2+6$
$= 8$

5. $g(5) = 2(5)^2 - 1$
$= 2(25) - 1$
$= 50 - 1$
$= 49$

6. $f(4) + g(-1) = -10 + 1 = -9$
$f(4) = 2 - 3(4) = 2-12 = -10$
$g(-1) = 2(-1)^2 - 1 = 2-1 = 1$

7. Find the domain and range.

Domain: $-3 \leq x < 3$
$[-3, 3)$

Range: $-3 < y \leq 5$
$(-3, 5]$