Notes: Using Function Notation

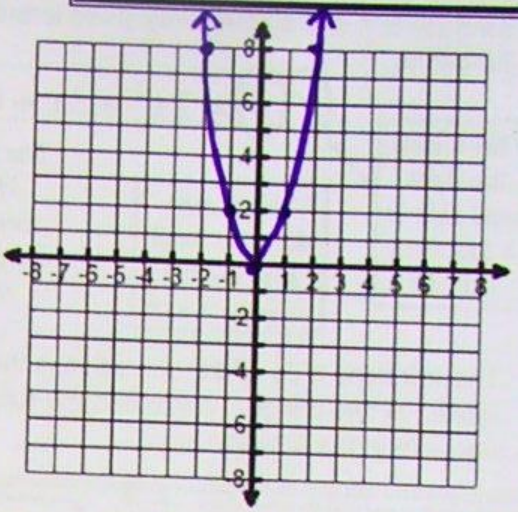
From a given rule for a relation, you can write a table of values.

Choose convenient x-values (domain or input).
Evaluate for corresponding y-values (range or output).

Definition of Function:
A **function** is a relation in which each element of the domain is paired with exactly one element of the range.

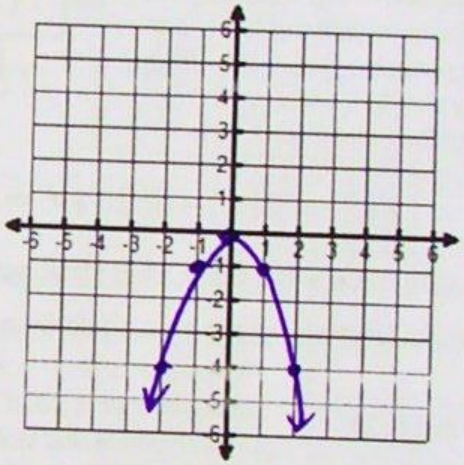
1) Write a table of values and graph.
$f(x) = 2x^2$

x	$2x^2$	$f(x)$
-2	$2(-2)^2 = 2(4) =$	8
-1	$2(-1)^2 = 2(1) =$	2
0	$2(0)^2 = 2(0) =$	0
1	$2(1)^2 = 2(1) =$	2
2	$2(2)^2 = 2(4) =$	8



2) Write a table of values and graph.
$f(x) = -x^2$

x	$-x^2$	$f(x)$
-2	$-(-2)^2 =$	-4
-1	$-(-1)^2 =$	-1
0	$-(0)^2 =$	0
1	$-(1)^2 =$	-1
2	$-(2)^2 =$	-4



The rule for a function f is written with the symbol $f(x)$, read "f of x", where x is the variable of the domain.

Rule

$y = x + 4$

Function notation $f(x) = x + 4$
Find $f(3)$ means evaluate this function for $x = 3$.
$f(3) = 3 + 4 = 7$

aluate each function for the given x-value.

$f(x) = 2x - 7$

$(-5) = 2(-5) - 7$
$= -10 - 7$
$= -10 + -7$
$= -17$

4) $g(x) = 5x^2 + 1$

$g(3) = 5(3)^2 + 1$
$5 \cdot 9 + 1$
$45 + 1$
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5) $f(x) = 8x^2 + 5$

$f(-1) = 8(-1)^2 + 5$
$8 \cdot 1 + 5$
$8 + 5$
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