U3D1 MCR3UI **Functions, Function Notation and Domain and Range (Section 3.1)**

Recall:

How do we know if a relation is a function?

- ✓ Each independent value (i.e. x-value) has only _________ dependent value (i.e. y value)
- ✓ The graph passes the _______________________ - a vertical line will only ever cross the graph ____________.

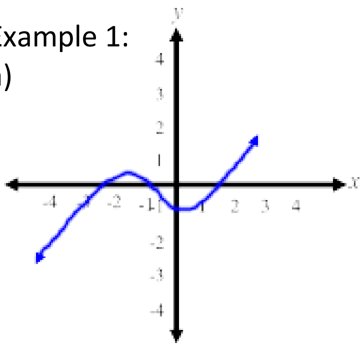
Every function has a domain and range.

Domain: The set of all possible ______________________ in the relation

Range: The set of all possible _______________________ in the relation

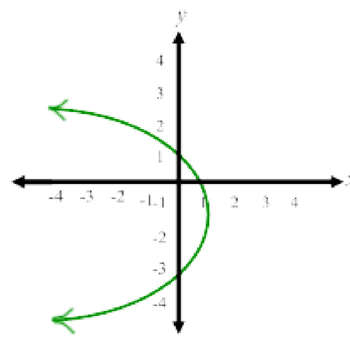
Example 1:

a)



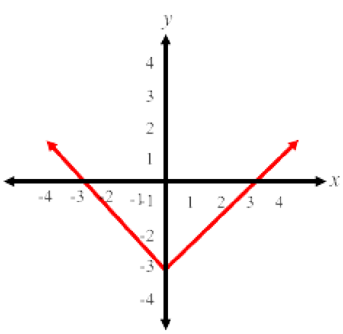
Function? Yes or No
D:
R:

b)



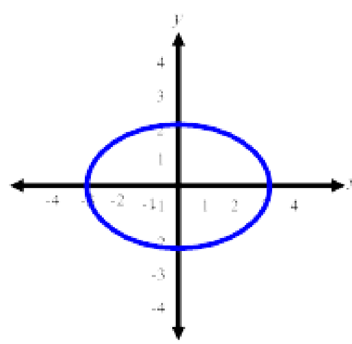
Function? Yes or No
D:
R:

c)



Function? Yes or No
D:
R:

d)



Function? Yes or No
D:
R:

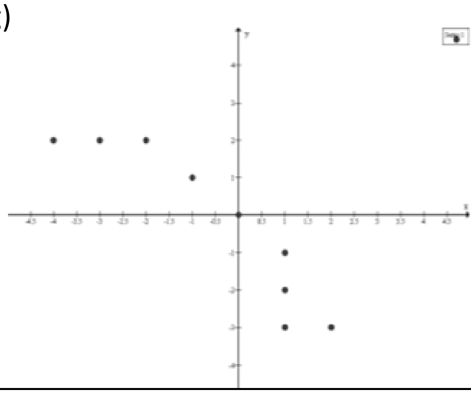
e) $\{(1,2),(2,-3),(4,5)\}$

Function? Yes or No
D:
R:

f) $g(x) = x^2$

Function? Yes or No
D:
R:

g)

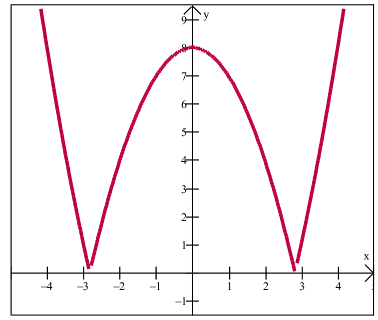


Function? Yes or No

D:

R:

h)

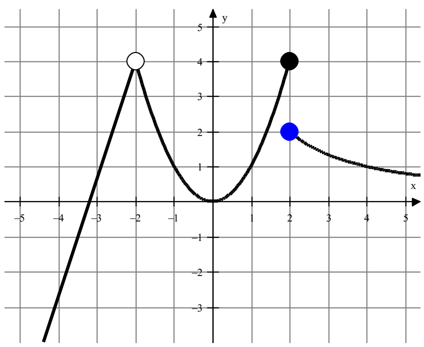


Function? Yes or No

D:

R:

i)



Function? Yes or No

D:

R:

j) $3x - 5y = 12$

Function? Yes or No

D:

R:

k) $f(x) = -3x^2 + 5$

Function? Yes or No

D:

R:

FUNCTION NOTATION

Function notation is an alternative way to write a function. A common function notation used is f(x), which is read as "f of x". This just means that a functions final value, f(x), is dependent on the value of x. Note: f(x) is exactly the same thing as y in our equations. Also note, that it does not mean "f times x"! The variable used to represent the function can also change so that you can decipher multiple different functions within any given problem (i.e. g(x), h(x), etc). Function notation helps give a little bit more information about the function. For example, if you see f(4) = -6, this means that the function has a value of -6 when x = 4, thus a point on the graph would be (4, -6).

Example 2:

a) If $f(x) = 3x^2 - 7$, evaluate $f(-3)$

b) If $f(x) = 1 - 3x$, find and simplify $3f(m + 2)$

c) If $f(x) = x^2 - 5x$, find the values of x if the value of $f(x)$ is 6.