Algebra II

1-1 Relations and Functions

Relation – set of ordered pairs	Domain – set of all first coordinates (x's) from the ordered pairs	Range – set of all second coordinates (y's) from the ordered pairs

Example 1: {(5,3), (-9,1), (6,-7)}

Name the domain {-9, 5, 6}

Name the range {-7, 1, 3}

Function – a special type of relation where… there are no numbers that repeat in the domain.

Determine if the following relations are functions or not, and why??

1) {(-3,2), (2,-3), (3,2), (2,3)} NO

2) {(-1,8), (-2,7), (-1,6)} NO

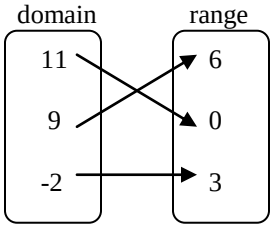
3) {(0.5,1.3), (6,-3), $(\frac{1}{2}$,-12)} NO

4) {$(0.5, \frac{2}{3})$, (1,-7), (-8,-7)} YES

A mapping – shows how the members of a relation are paired.

List the ordered pairs for each mapping, then determine whether it is a function.

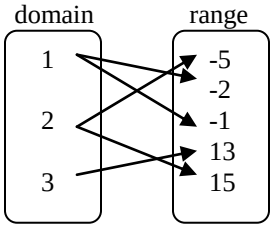
5)



(11, 0), (9, 6), (-2, 3)

Function? YES

6)



(1, -5), (1, -2), (2, -5), (2, 15), (3, 13)

Function? NO

Function notation: y = 3x – 7 means the same as f(x) = 3x – 7 or the function of x equals 3x – 7

Plug in an "x" and compute a y (or f(x))

If $f(x) = 3x - 7$ and $g(x) = 2x^2 - x + 5$, find the following:

7) f(-8)

$f(-8) = 3(-8) - 7$
$= -24 - 7$
$= -31$

8) g(4)

$g(4) = 2(4)^2 - 4 + 5$
$= 2(16) - 4 + 5$
$= 32 - 4 + 5$
$= 33$

9) g(1/2)

$g(1/2) = 2(1/2)^2 - 1/2 + 5$
$= 2(1/4) - 1/2 + 5$
$= 1/2 - 1/2 + 5$
$= 5$

10) f(2y)

$f(2y) = 3(2y) - 7$
$= 6y - 7$

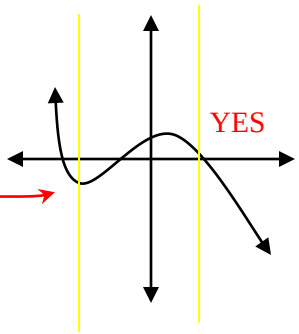
11) f(n + 5)

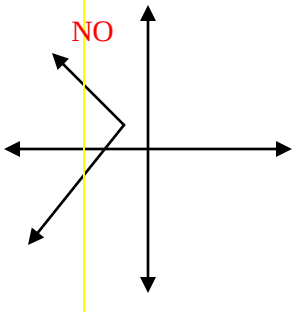
$f(n + 5) = 3(n + 5) - 7$
$= 3n + 15 - 7$
$= 3n + 8$

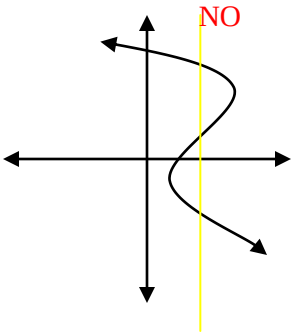
12) $g(4a^3)$

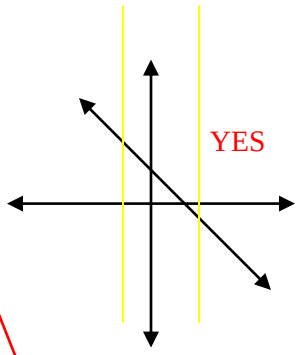
$g(4a^3) = 2(4a^3)^2 - 4a^3 + 5$
$= 2(16a^6) - 4a^3 + 5$
$= 32a^6 - 4a^3 + 5$

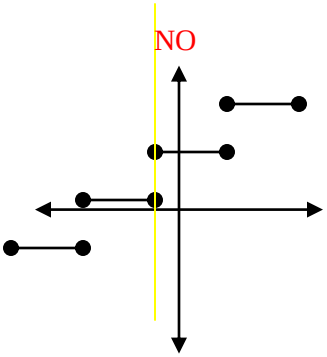
Determine if each relation graphed is a function or not.

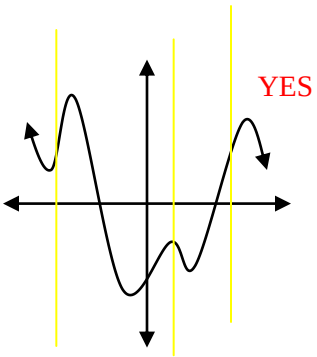












VERTICAL LINE TEST -
Draw a vertical line thru the drawing. If there is any location in which a vertical line will intersect the graph more than once, then it is not a function

DISCRETE

AND

CONTINUOUS

A set of coordinates, or a mapping (which represents a set of coordinates). These are just single points when graphed.

Example: {(3, 7), (-9, 10), (-1, -1)} is a discrete function

An equation. When graphed, equations make a line, which goes on infinitely (or continuously).

Example: $f(x) = 3x^2 + 2$ is a continuous function