2.1-Basic of Functions and their graphs

Wednesday, January 31, 2018 10:56 AM

Obj 1: Define a relation. Find the domain and the range of a relation

Definition: A relation is a set of ordered pairs.

(**Note:** a set is a collection of objects)

E.g. of a relation

$$\{(4,6);(6,4);(12,8);(0.5,1.5);(\tfrac{1}{2},\tfrac{3}{4})\}$$

E.g. of a relation

{(plain doghnut, \$0.5), (chocolate doghnut, \$1);
(vanilla doghnut, \$1.25)}

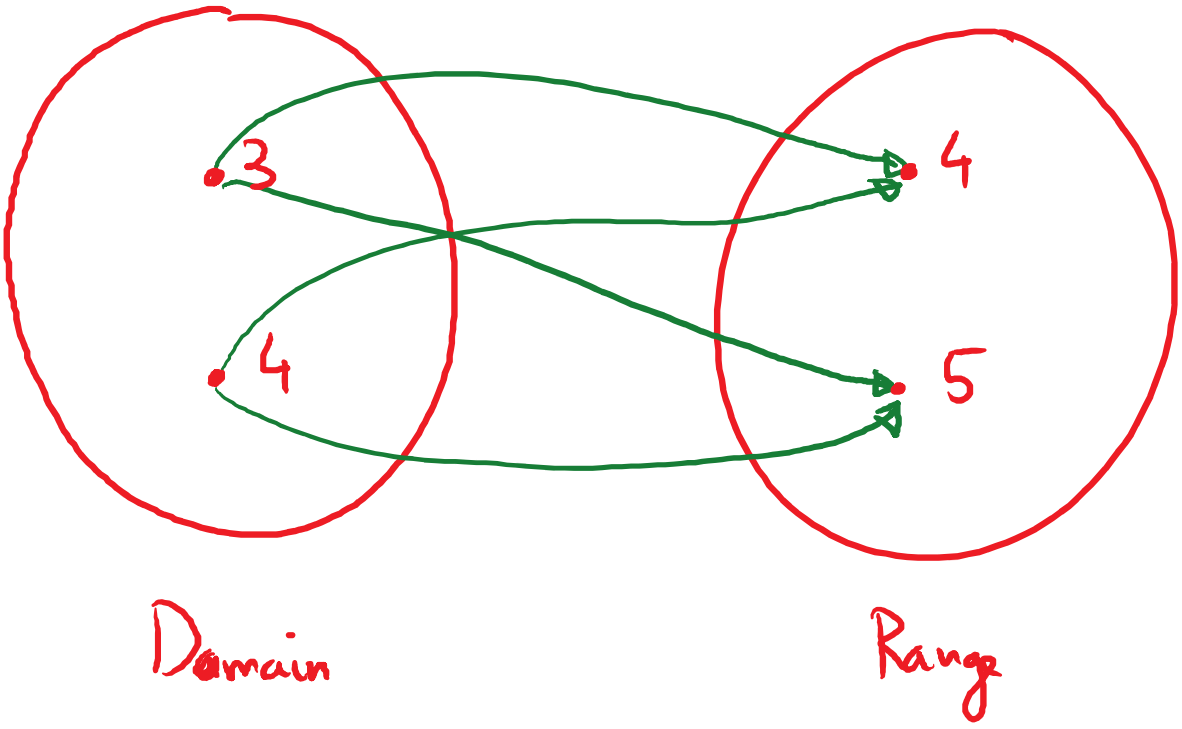
Definition: The set of all first components of the ordered pairs is called the domain of the relation.
The set of all second components of the ordered pairs

is called the range of the relation.

E.g. $\{(3,4);(3,5);(4,4);(4,5)\}$

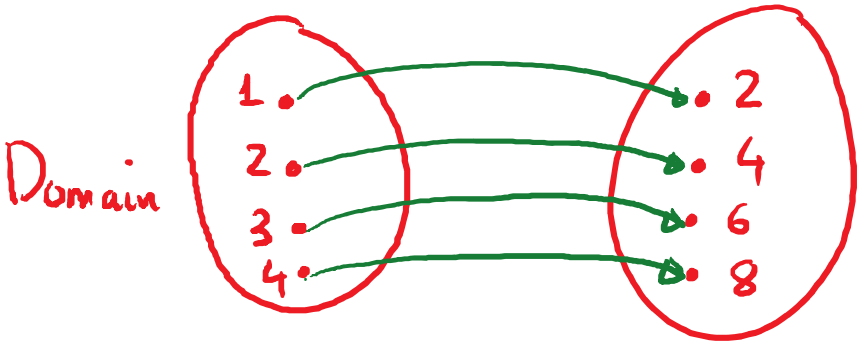
Domain of this relation $= \{3, 4\}$

Range of this relation $= \{4, 5\}$



NOT a function

E.g. Relation $= \{(1,2);(2,4);(3,6);(4,8)\}$



IS a function

Definition of a function:

A function is a relation in which each element in the domain corresponds to exactly one element in the range

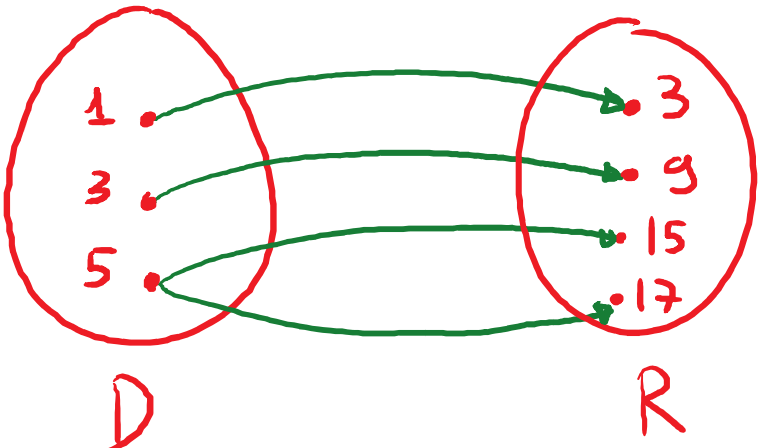
Obj 2: Determine whether a relation is a function.

E.g. Is the given relation a function? Why?

① $R = \{(1,3); (3,9); (5,15); (5,17)\}$

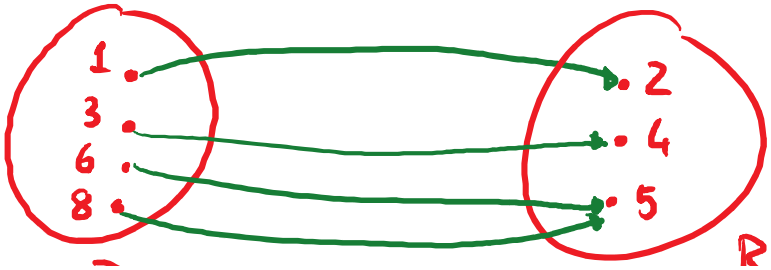
② $S = \{(1,2); (3,4); (6,5); (8,5)\}$.

①

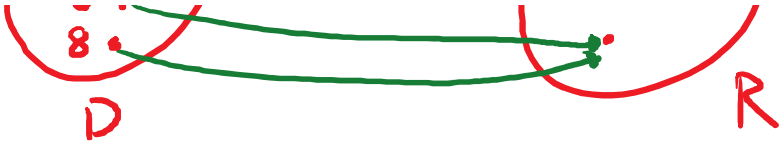


NOT a function.

②



IS a function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Obj 3: Determine whether an equation represents a function.

Key: If an equation is solved for y and more than one value of y can be obtained for a given value of x, then the equation does not represent a function

E.g. (a) $x = y^2$. Does this equation represent a function of y in terms of x?

$y = \pm\sqrt{x}$ **NO**

(b) $x^2 + 3y = 16$. Does this equation represent a function of y in terms of x?

$3y = 16 - x^2$

$y = \dfrac{16 - x^2}{3}$ **Yes**