Domain & Range

DOMAIN: the set of all possible values for x, the input variable of a relation
RANGE: the set of all possible values for y, the output variable of a relation
DISCRETE: a set of ordered pairs that graphs a scatter plot
COUNTINUOUS: a line or curve without breaks, gaps, or holes
BOUNDED: a set between two endpoints that are real numbers
UNBOUNDED: a set with no endpoints; it extends to infinity in both directions
HALF-BOUNDED: a set with one endpoint that is a real number and the other end extends to infinity

Example 1 Discrete Relations

Give the domain and range as sets of numbers in order from least to greatest, with no repeats. Recall that the elements of a set are grouped inside braces with commas between. Then decide if each relation is a function.

[A] $\{(2,1),(3,-1),(0,1),(1,-1)\}$
Domain:

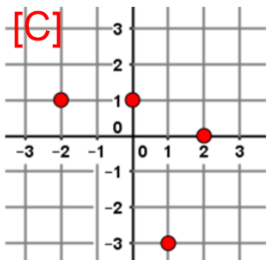
Range:

Function?

[B] $\{(2,1),(3,2),(0,3),(2,-1)\}$
Domain:

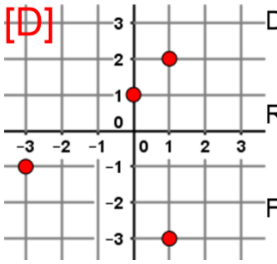
Range:

Function?

[C]

Domain:

Range:

Function?

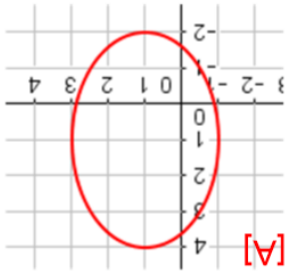
[D]

Domain:

Range:

Function?

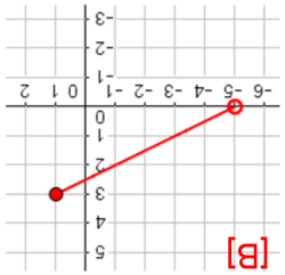
Example 2 Continuous, Bounded Relations

Use an "and" compound inequality to give the domain and range of each relation.
Then decide if the relation is a function.

[A]

Domain:

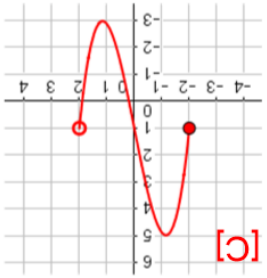
Range:

Function?

[B]

Domain:

Range:

Function?

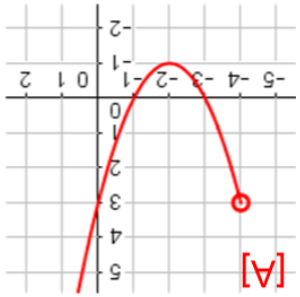
[C]

Domain:

Range:

Function?

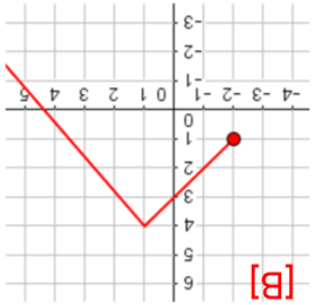
Example 3 Continuous, Half-Bounded Relations

Use either a $\geq$ or $\leq$ inequality to restrict the domain/range if not "all real numbers." $\mathbb{R}$
Assume each graph extends to infinity unless an open/closed circle is shown for an endpoint.

[A]

Domain:

Range:

Function?

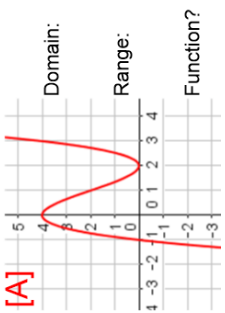
[B]

Domain:

Range:

Function?

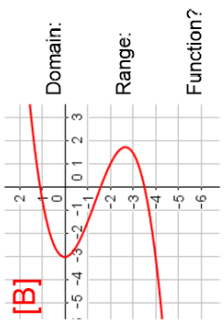
Example 4 Continuous, Unbounded Relations

Use the notation $\mathbb{R}$ for "all real numbers".

[A]

Domain:

Range:

Function?

[B]

Domain:

Range:

Function?