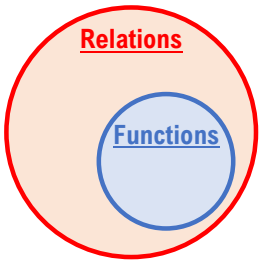
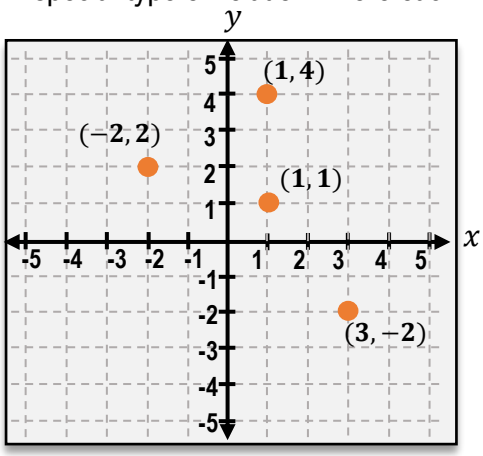
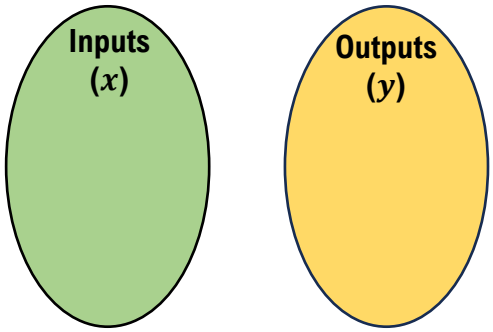
TOPIC: INTRO TO FUNCTIONS & THEIR GRAPHS

Relations and Functions

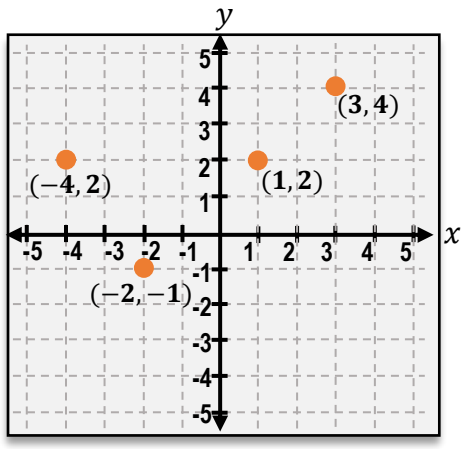


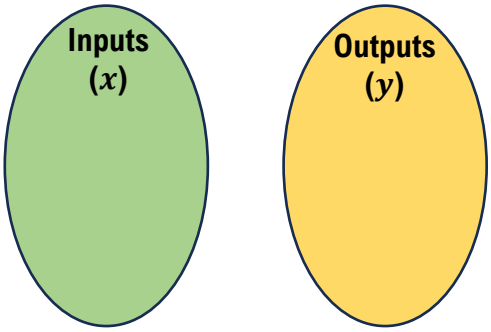
- **Relation**: A connection between _____ & _____ values.
  - Graphically, they are represented as _____ pairs (x, y)
- **Function**: A special type of relation where each **input** has at most _____ **output**.





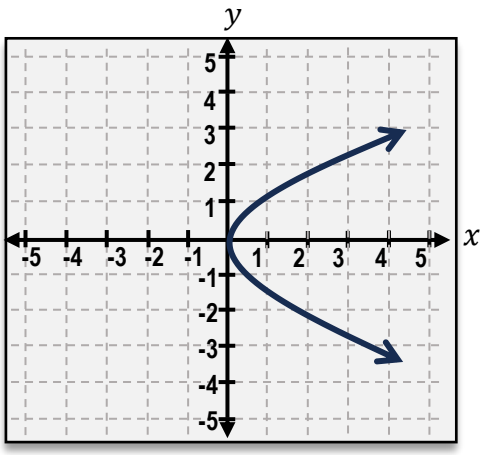
[FUNCTION | NOT A FUNCTION]



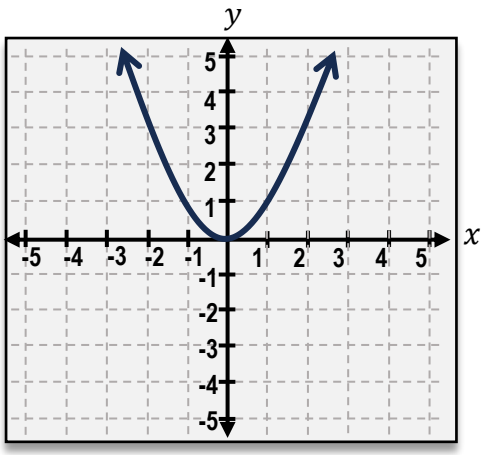


[FUNCTION | NOT A FUNCTION]

- A way to quickly determine if a graph is a function or not is the **Vertical Line Test:**
  - If you can draw ***any*** vertical line that passes through more than 1 point, the graph _____ a function.



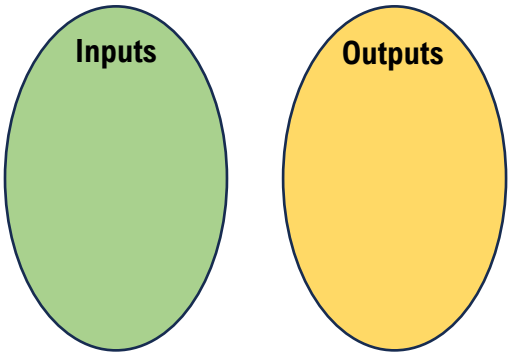
[FUNCTION | NOT A FUNCTION]



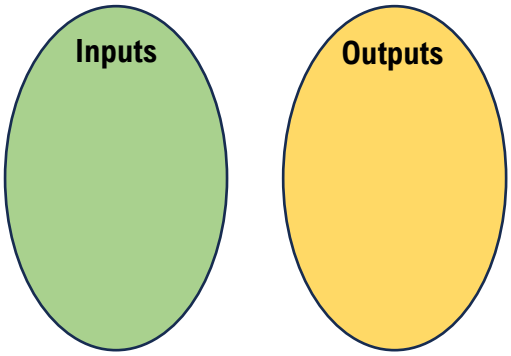
[FUNCTION | NOT A FUNCTION]

TOPIC: INTRO TO FUNCTIONS & THEIR GRAPHS

PRACTICE: State the inputs and outputs of the following relation. Is it a function? $\{(-3,5),(0,2),(3,5)\}$

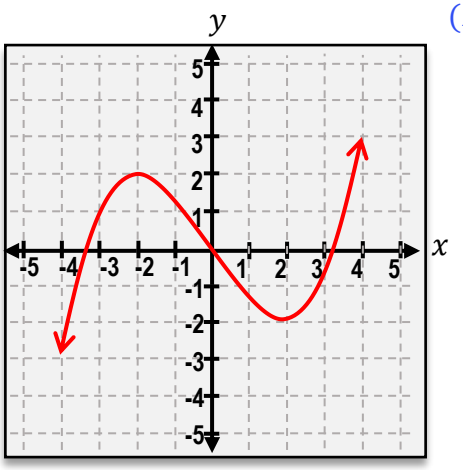


PRACTICE: State the inputs and outputs of the following relation. Is it a function? $\{(2,5),(0,2),(2,9)\}$

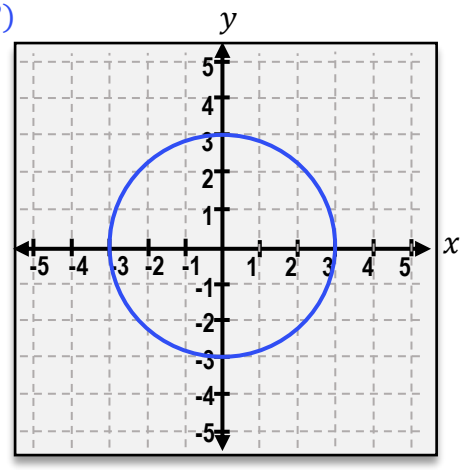


PROBLEM: Determine below which of the graphs are functions (select all that apply).

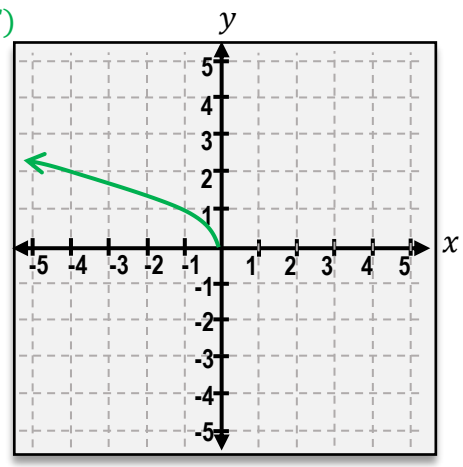
(A)



(B)



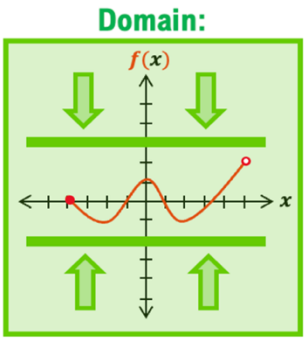
(C)

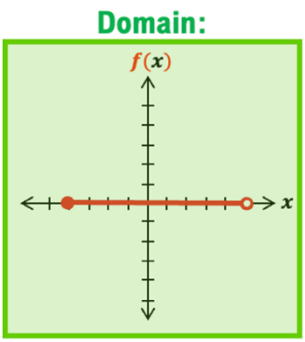


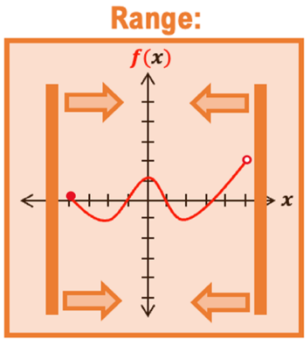
TOPIC: INTRO TO FUNCTIONS & THEIR GRAPHS

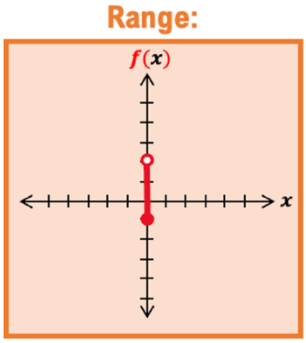
Finding The Domain And Range Of A Graph

- The **domain** of a graph is the allowed ___-values, and the **range** of a graph is the allowed ___-values.
  - To find the **domain** of a graph, "***squish***" to the ___-axis. To find the **range**, "***squish***" to the ___-axis.





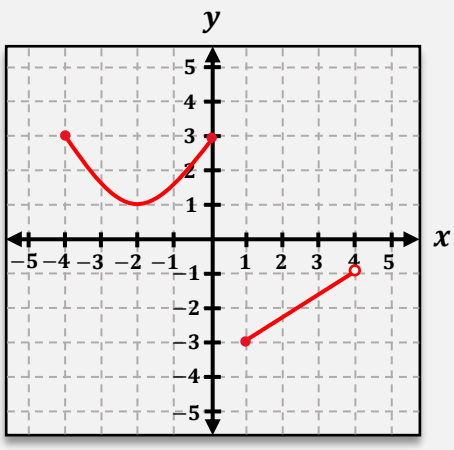


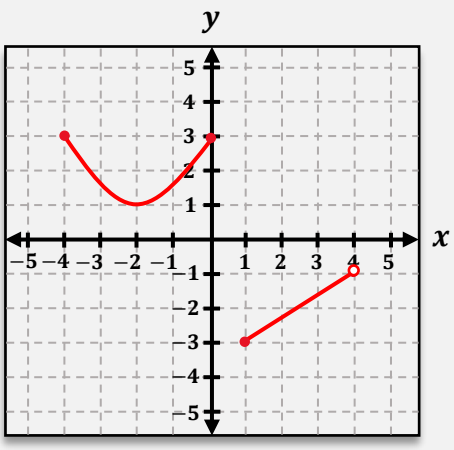


Interval Notation:	Set Builder Notation:
$Domain = [-4, 5)$	$Domain = \{x \mid -4 \leq x < 5\}$
$Range = [-1, 2)$	$Range = \{y \mid -1 \leq x < 2\}$

- The **[,], ≤, ≥** symbols mean we **[INCLUDE | DON'T INCLUDE]** the value.
- The **(,), <, >** symbols mean we **[INCLUDE | DON'T INCLUDE]** the value.

EXAMPLE: Determine the **domain** & **range** of the following graph below. Express the answer using interval notation.





- When we have multiple intervals or "jumps" in the graph, use the union symbol (___).

TOPIC: INTRO TO FUNCTIONS & THEIR GRAPHS

PRACTICE: Find the domain and range of the following graph (write your answer using interval notation).