Warm Up -

1. **Evaluate the function $f(x) = x^2 - 9$ given the inputs $\{-4, -2, 0, 4\}$.**

$\{7, -5, -9, 7\}$

2. **Given the function $g(x) = 4^x + 5$, what is $f(3)$?**

$g(3) = 4^{(3)} + 5$
$= 69$

3. **Given the graph,**
   a. $f(2) =$ 1
   b. $f(-4) =$ -2
   c. $f(4) =$ 2

4. **Given the table,**
   a. $f(3) =$ 1
   b. $f(0) =$ 4
   c. $f(1) =$ 2

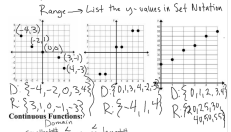
x	f(x)
0	4
1	2
2	3
3	1
4	0

Features of Functions:

- **Domain:**
- **Range:**
- **Increasing**
  going up
  * as x gets bigger y also gets bigger
- **Decreasing:**
  going down
  as x is getting bigger the y is getting smaller
- **Positive:**
  y-values
  * when the y-values are positive (above x-axis)
- **Negative:**
  * when the y-values are negative (below x-axis)
- **Continuous:**
  all the pts are connected
- **Discrete:**
  No pts connected

Writing Domain and Range

Discrete Functions:
Domain → List the x-values
Range → List the y-values in Set Notation
Set Notation $\{\#, \#, \#, \#\}$



D: $\{-4, -2, 0, 3.4\}$
R: $\{3, 1, 0, -1, -3\}$

D: $\{0, 1, 3, 4, 2.5\}$
R: $\{-4, 1, 4\}$

D: $\{0, 1, 1, 2, 3.5\}$
R: $\{2, 0.75, 3.5, 4, 4.5\}$

Continuous Functions:
Domain
Smallest x (left) ≤ x ≤ largest x (right)

D: $0 \le x \le 15$
R: $0 \le y \le 25$

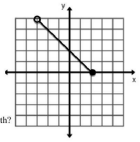
D: $-3 < x < 2$
R: $-9 < y < 1$

D: $2 \le x \le 5$
R: $3 \le y \le 4$

Ex. 1:

Domain:

Range:

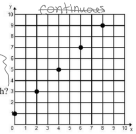


Increasing or Decreasing or Both?

Positive or Negative or Both?

Continuous or Discrete?

Ex. 2:



Domain: $\{0, 2, 4, 6, 8\}$

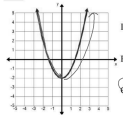
Range: $\{1, 3, 5, 7, 9\}$

Increasing or Decreasing or Both?

Positive or Negative or Both?

Continuous or Discrete?

Ex. 3:



Increasing or Decreasing or Both?

Positive or Negative or Both?

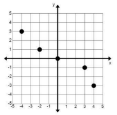
Continuous or Discrete?

Ex. 4:

Increasing or Decreasing or Both?

Positive or Negative or Both?

Continuous or Discrete?



Ex. 5:

Increasing or Decreasing or Both?

Positive or Negative or Both?

Continuous or Discrete?