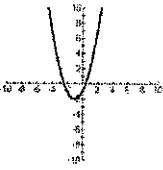


# Characteristics of Quadratics

## Min

Labeled as a point  $(x,y)$

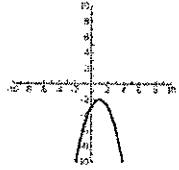
Lowest place on the graph



## Max

Labeled as a point  $(x,y)$

Highest place on the graph



the min or max is also the vertex

<h2 style="font-size: 2em;">Domain</h2> <p>x-values</p> <p>how far your graph goes left and right</p> <p style="font-size: 1.5em;">all real #'s</p>	<h2 style="font-size: 2em;">Range</h2> <p>y-values</p> <p>how far your graph goes up and down</p> <p style="font-size: 1.5em;">(#, #)</p> <p><small>--will include <math>\infty</math> [ ] means it includes that #</small></p>
---	---

The line that goes through the vertex

denoted as  $x = \underline{\hspace{2cm}}$

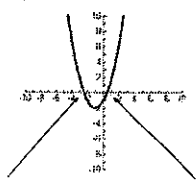
x-value of your vertex

# Vertex

Labeled as a point  $(x,y)$

# Zeros

Write as a point  $(x,0)$



x-intercepts

where the graph crosses the x-axis

roots

solutions

## y-intercept

where the graph crosses the y-axis

write as a point  $(0,y)$

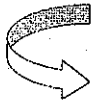
## Interval of Increase

Cover the y axis

Look at the x axis

Where are you  
"climbing?"

Write as an INTERVAL



$(-\infty, 0)$

$(3, \infty)$

$(-2, 8)$

THE ANSWERS  
CAN LOOK  
LIKE THIS!

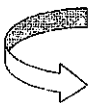
## Interval of Decrease

Cover the y axis

Look at the x axis

Where are you  
"sliding?"

Write as an INTERVAL



$(-\infty, 0)$

$(3, \infty)$

$(-2, 8)$

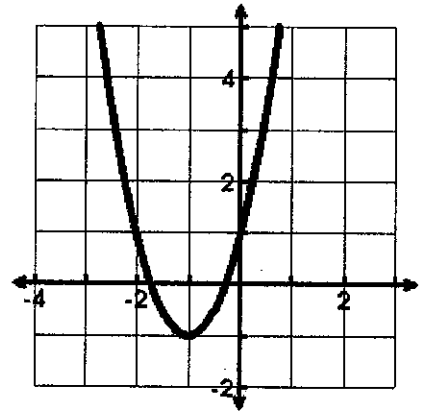
THE ANSWERS  
CAN LOOK  
LIKE THIS!

Name: \_\_\_\_\_ Date: \_\_\_\_\_

### Characteristics of Functions

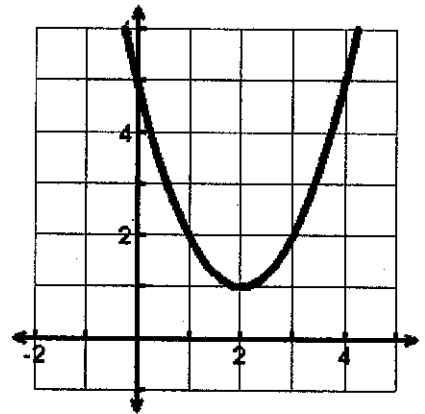
1.  $f(x) = 2x^2 + 4x + 1$

- a. Domain: \_\_\_\_\_ b. Range: \_\_\_\_\_  
 c. Extrema: \_\_\_\_\_ d. Axis of Sym: \_\_\_\_\_  
 e. Increasing: \_\_\_\_\_ f. Decreasing: \_\_\_\_\_  
 g. End Behavior:  $x \rightarrow \infty, y \rightarrow \underline{\hspace{1cm}}$  &  $x \rightarrow -\infty, y \rightarrow \underline{\hspace{1cm}}$   
 h. Average rate of change  $0 \leq x \leq 2$



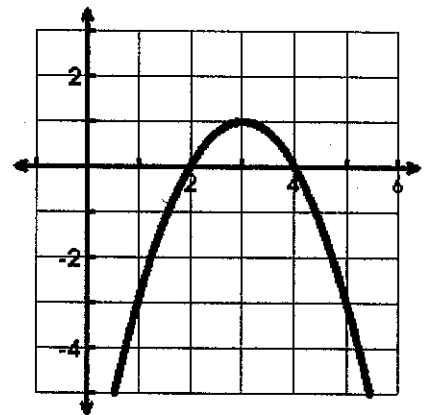
2.  $f(x) = (x-2)^2 + 1$

- a. Domain: \_\_\_\_\_ b. Range: \_\_\_\_\_  
 c. Extrema: \_\_\_\_\_ d. Axis of Sym: \_\_\_\_\_  
 e. Increasing: \_\_\_\_\_ f. Decreasing: \_\_\_\_\_  
 g. End Behavior:  $x \rightarrow \infty, y \rightarrow \underline{\hspace{1cm}}$  &  $x \rightarrow -\infty, y \rightarrow \underline{\hspace{1cm}}$   
 h. Average rate of change  $0 \leq x \leq 2$



3.  $f(x) = -(x-2)(x-4)$

- a. Domain: \_\_\_\_\_ b. Range: \_\_\_\_\_  
 c. Extrema: \_\_\_\_\_ d. Axis of Sym: \_\_\_\_\_  
 e. Increasing: \_\_\_\_\_ f. Decreasing: \_\_\_\_\_  
 g. End Behavior:  $x \rightarrow \infty, y \rightarrow \underline{\hspace{1cm}}$  &  $x \rightarrow -\infty, y \rightarrow \underline{\hspace{1cm}}$   
 h. Average rate of change  $0 \leq x \leq 2$



Part I: Characteristics of Functions

1. Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Zeros: \_\_\_\_\_

Vertex: \_\_\_\_\_

Axis of

Symmetry: \_\_\_\_\_

Int of Inc: \_\_\_\_\_

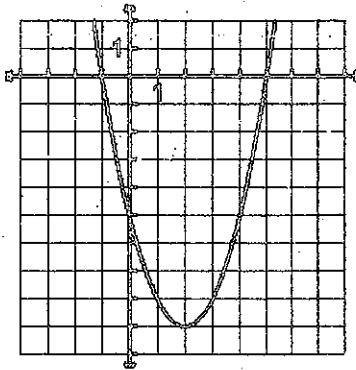
Int of Dec: \_\_\_\_\_

Min: \_\_\_\_\_

Max: \_\_\_\_\_

Avg. Rate of change

$0 \leq x \leq 3$  \_\_\_\_\_



2. Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Zeros: \_\_\_\_\_

Vertex: \_\_\_\_\_

Axis of

Symmetry: \_\_\_\_\_

Int of Inc: \_\_\_\_\_

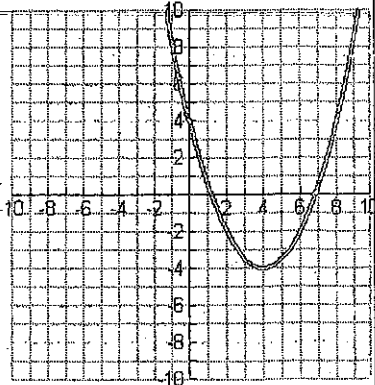
Int of Dec: \_\_\_\_\_

Min: \_\_\_\_\_

Max: \_\_\_\_\_

Avg. Rate of change

$0 \leq x \leq 6$  \_\_\_\_\_



Write the equation of the graph:

Write the equation of the graph:

3. Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Zeros: \_\_\_\_\_

Vertex: \_\_\_\_\_

Axis of

Symmetry: \_\_\_\_\_

Int of Inc: \_\_\_\_\_

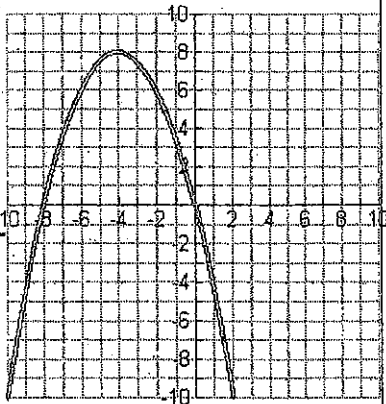
Int of Dec: \_\_\_\_\_

Min: \_\_\_\_\_

Max: \_\_\_\_\_

Avg. Rate of change

$-6 \leq x \leq 0$  \_\_\_\_\_



4. Domain: \_\_\_\_\_

Range: \_\_\_\_\_

Zeros: \_\_\_\_\_

Vertex: \_\_\_\_\_

Axis of

Symmetry: \_\_\_\_\_

Int of Inc: \_\_\_\_\_

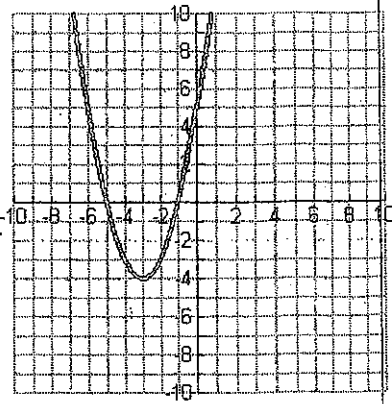
Int of Dec: \_\_\_\_\_

Min: \_\_\_\_\_

Max: \_\_\_\_\_

Avg. Rate of change

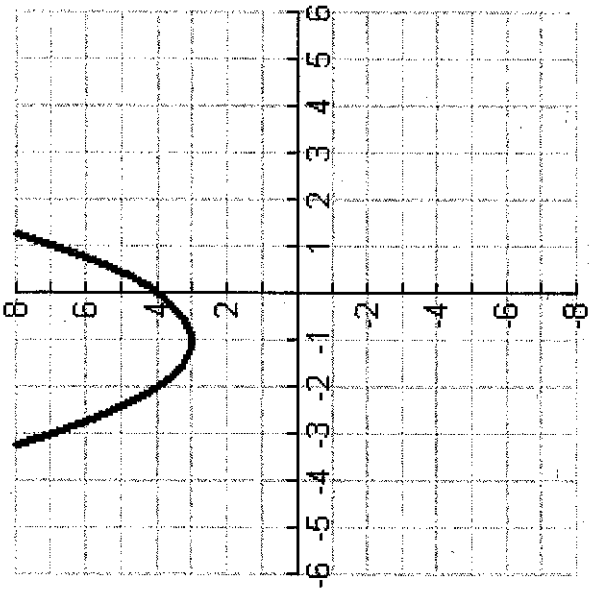
$-3 \leq x \leq 1$  \_\_\_\_\_



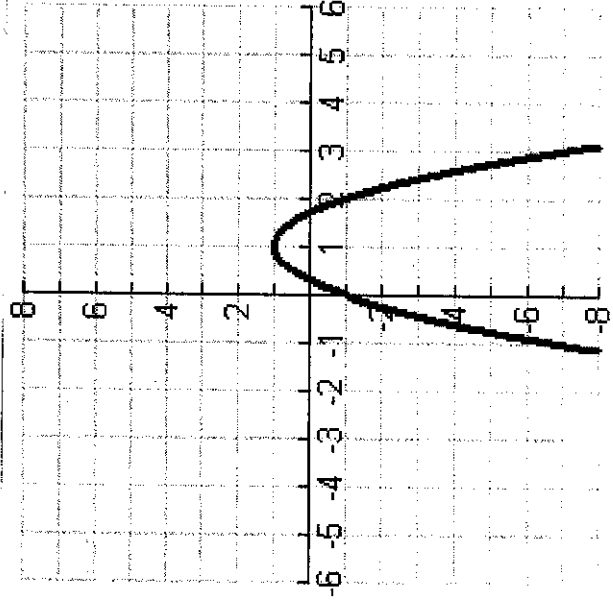
Write the equation of the graph:

Write the equation of the graph:

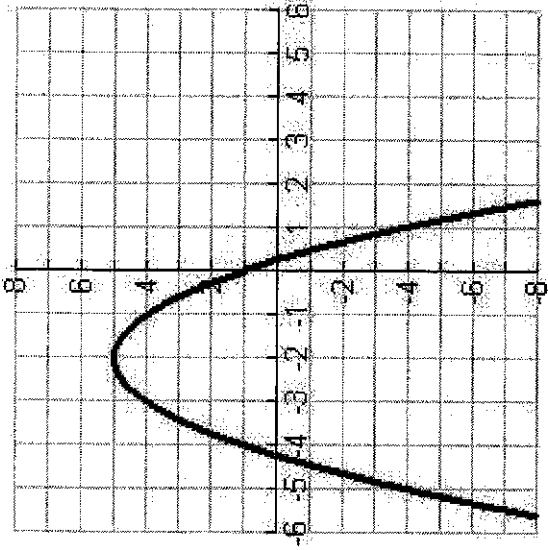
# Practice!



- x Domain \_\_\_\_\_
- y Range \_\_\_\_\_
- y Maximum Value \_\_\_\_\_
- y Minimum Value \_\_\_\_\_
- Zeros or x-intercepts \_\_\_\_\_
- y-intercept  $x=0$  \_\_\_\_\_
- Axis of symmetry \_\_\_\_\_ (write as  $x = \underline{\quad}$ )
- Vertex  $(x,y)$  \_\_\_\_\_
- Interval of increase  $[x,x]$  \_\_\_\_\_
- Interval of decrease  $[x,x]$  \_\_\_\_\_



- Domain \_\_\_\_\_
- Range \_\_\_\_\_
- Maximum Value \_\_\_\_\_
- Minimum Value \_\_\_\_\_
- Zeros \_\_\_\_\_
- y-intercept \_\_\_\_\_
- Axis of symmetry \_\_\_\_\_ (write as  $x = \underline{\quad}$ )
- Vertex \_\_\_\_\_
- Interval of increase \_\_\_\_\_
- Interval of decrease \_\_\_\_\_



Domain \_\_\_\_\_

Range \_\_\_\_\_

Maximum Value \_\_\_\_\_

Minimum Value \_\_\_\_\_

Zeros \_\_\_\_\_

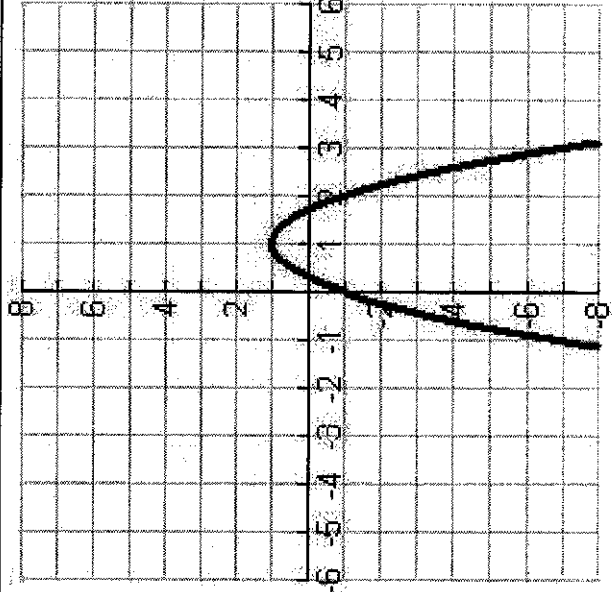
y-intercept \_\_\_\_\_

Axis of symmetry \_\_\_\_\_ (write as  $x = \underline{\quad}$ )

Vertex \_\_\_\_\_

Interval of increase \_\_\_\_\_

Interval of decrease \_\_\_\_\_



Domain \_\_\_\_\_

Range \_\_\_\_\_

Maximum Value \_\_\_\_\_

Minimum Value \_\_\_\_\_

Zeros \_\_\_\_\_

y-intercept \_\_\_\_\_

Axis of symmetry \_\_\_\_\_ (write as  $x = \underline{\quad}$ )

Vertex \_\_\_\_\_

Interval of increase \_\_\_\_\_

Interval of decrease \_\_\_\_\_