

Name: _____

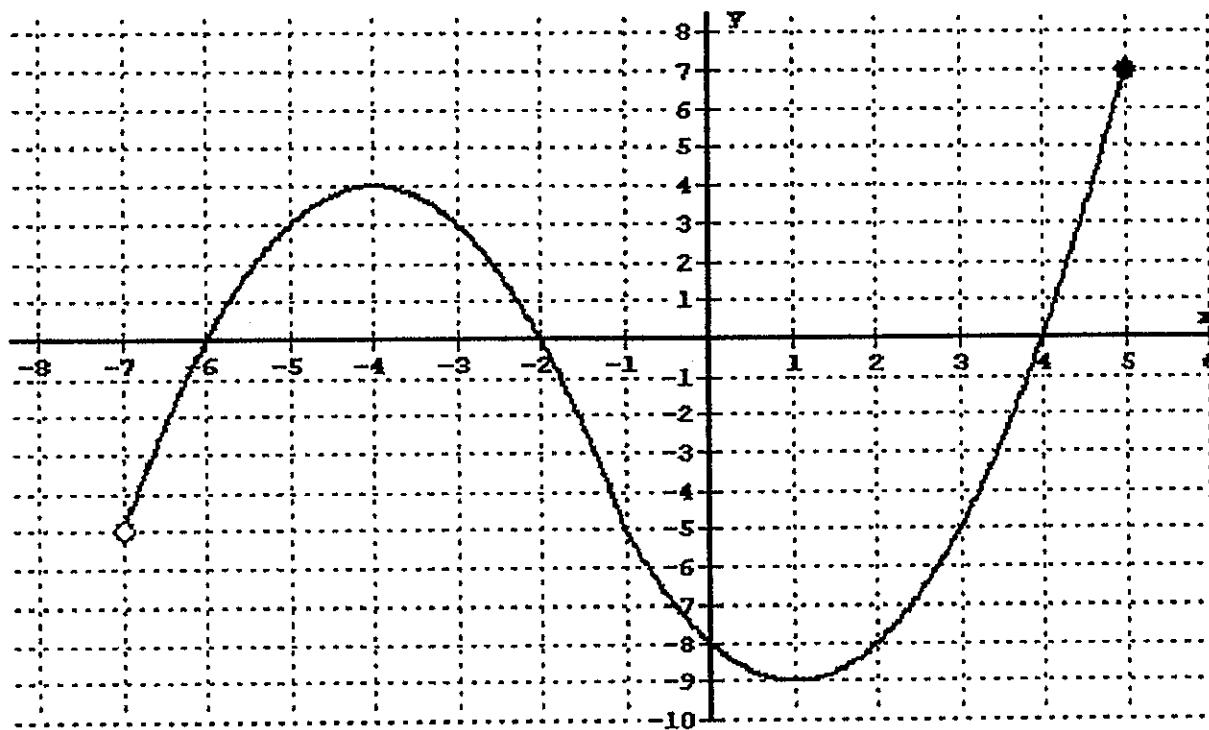
Mrs. Roubos

Date: _____

8A Period _____

Analyzing Functions

Analyze the graph below



$f(-3) =$ _____

$f(1) =$ _____



$f(2) =$ _____

Domain: x-values

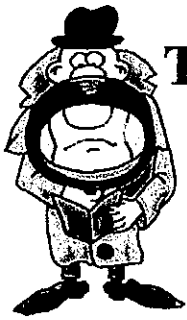
Range: y-values

Zeros: Solutions / x-intercepts / roots
where the function crosses the x-axis (where $y=0$)

Y-intercept: where the function crosses the
y-axis (where $x=0$)

<p>Increasing: $y_1 < y_2$ * Describe in terms of x (up the roller coaster)</p>	<p>Decreasing: $y_1 > y_2$ * Describe in terms of x (down the roller coaster)</p>
<p>$f(x) > 0$ (positive): $y > 0$, function is above the x-axis (Quad I + II only) * Describe in terms of x</p>	<p>$f(x) < 0$ (negative): $y < 0$, function is below the x-axis (Quad III + IV only) * Describe in terms of x</p>
<p>* Absolute maximum: <u>largest y-value</u> * Describe with the y-value or give the coordinate</p>	<p>* Absolute minimum: <u>smallest y-value</u> * Describe with the y-value or give the coordinate</p>
<p>** Relative maximum: <u>maximum turning point</u> * Describe with the y-value or give the coordinate</p> 	<p>** Relative minimum: <u>minimum turning point</u> * Describe with the y-value or give the coordinate</p> 

- Can be the same!
- * Absolute Maximum/Minimum- can, but does NOT have to be a turning point
 - * Can only have 1 of each (max/min)
 - ** Relative Maximum/Minimum- MUST be a turning point
 - * Can have multiple relative max/min



Taking a Closer Look!

Directions: Round answers to the nearest hundredth if needed.

Graph:

$$f(x) = \begin{cases} -x - 8, & -9 \leq x \leq -3 \\ -x^2 + 4, & -3 \leq x \leq 3 \\ x, & 3 < x \leq 7 \end{cases}$$

1. Is it a function?

x-value 2. Domain:

y-value 3. Range:

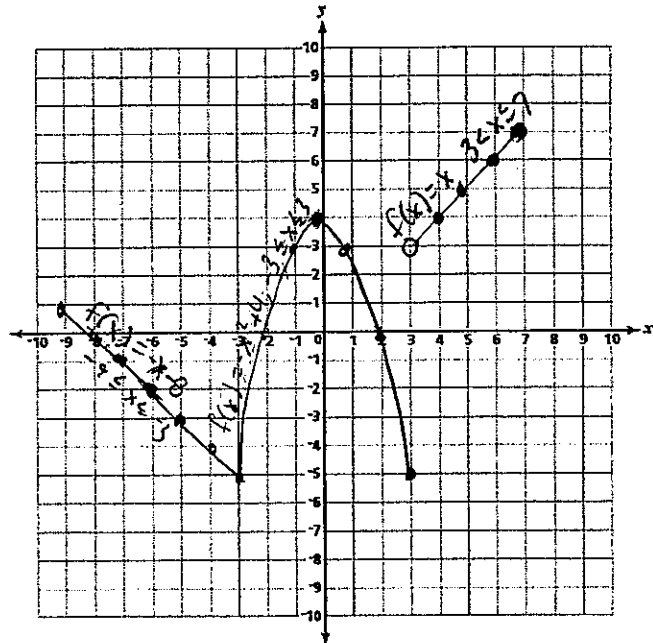
where $y=0$ 4. x-intercept(s):

where $x=0$ 5. y-intercept(s):

in terms of x { 6. Where is the graph increasing? $y_1 < y_2$ (uphill)
7. Where is the graph decreasing? $y_1 > y_2$ (downhill)

in terms of x { Neg. 8. Where is $y < 0$? below x-axis (Quad III + IV)
y-values
9. Where is $y > 0$? above x-axis (Quad I + II)
pos. y-values
10. Where is $y = 0$?

Same as
x-intercepts
roots, solutions



11. Find y when $x = 3$

12. For what x -value(s) is $y = 3$?

13. Maximum value of graph:
must be a turning point: Rel _____
doesn't have to be a T.P.: Abs _____
can only have 1

14. Minimum value of graph:
must be a turning point: Rel _____
doesn't have to be a T.P.: Abs _____
can only have 1

} Describe
w/ y-
value
or
give the
coordinate