

The x-intercept:

The point where the graph crosses the x-axis.

y-intercept:

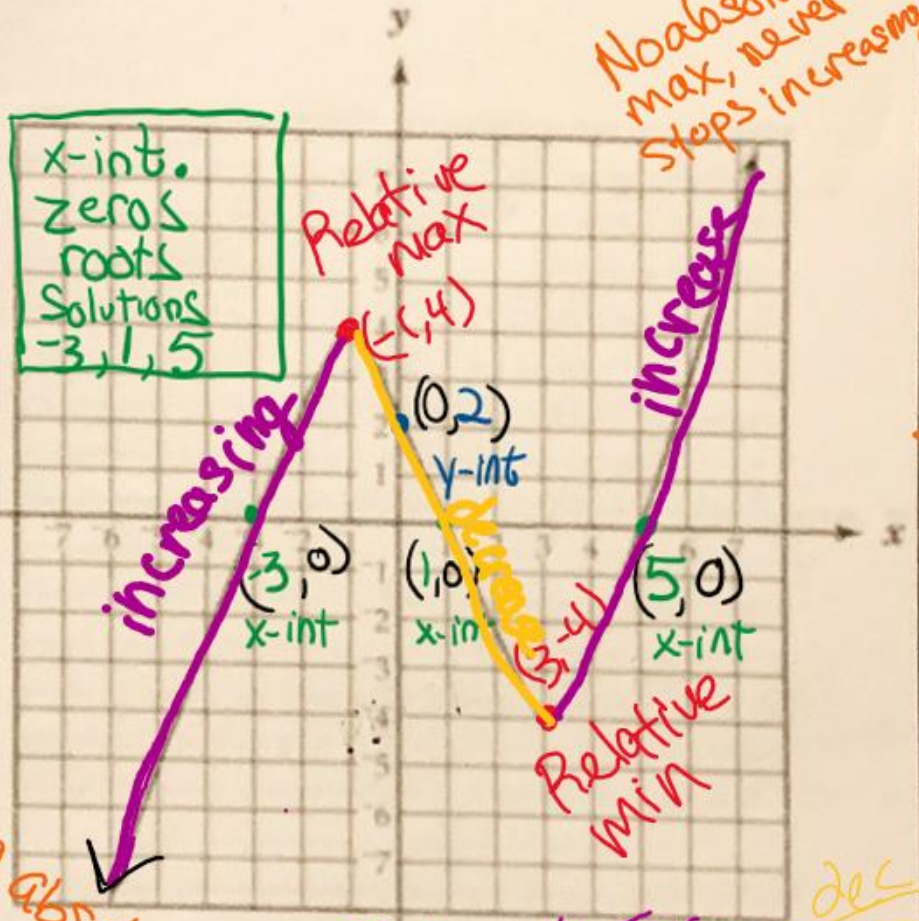
The point where the graph crosses the y-axis

Interval of increase

The x-values of the graph where the graph is rising from left to right.

Interval of decrease

x-values of the graph where the graph is falling from left to right.



Relative max & min
highest (max) and lowest (min) in a particular area of the graph (peaks and valleys)
Absolute max & min
absolutely highest & lowest part of the graph

End Behavior
as x approaches \pm
 $X \rightarrow -\infty, f(x) \rightarrow -\infty$
left
 $X \rightarrow \infty, f(x) \rightarrow \infty$
right

Intervals Inc.

$(-\infty, -1]$

$[3, \infty)$

dec
 $[-1, 3]$

Last Night's Homework

Name: _____

Date: _____

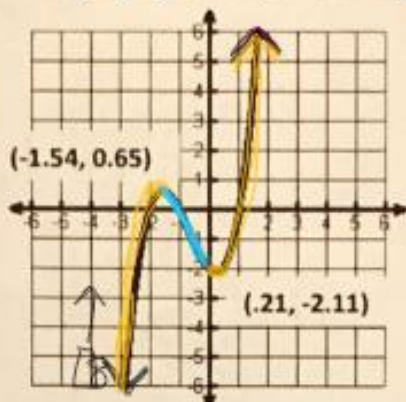
1. $f(x) = x^3 + 2x^2 - x - 2$

Rel. Max: $(-1.54, 0.65)$ Rel. Min: $(0.21, -2.11)$

Abs. Max: None Abs. Min: None

Inc: $(-\infty, -1.54) \cup (0.21, \infty)$ Dec: $(-1.54, 0.21)$

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$



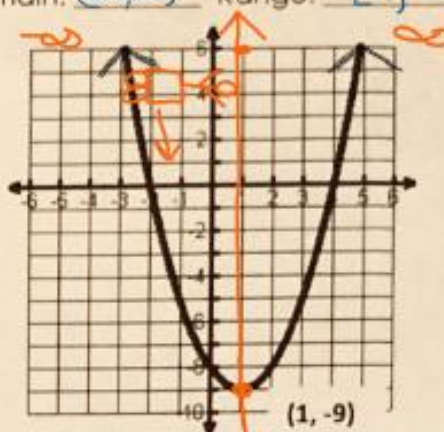
2. $f(x) = x^2 - 2x - 8$

Rel. Max: None Rel. Min: None

Abs. Max: None Abs. Min: $(1, -9)$

Inc: $(1, \infty)$ Dec: $(-\infty, 1)$

Domain: $(-\infty, \infty)$ Range: $[-9, \infty)$



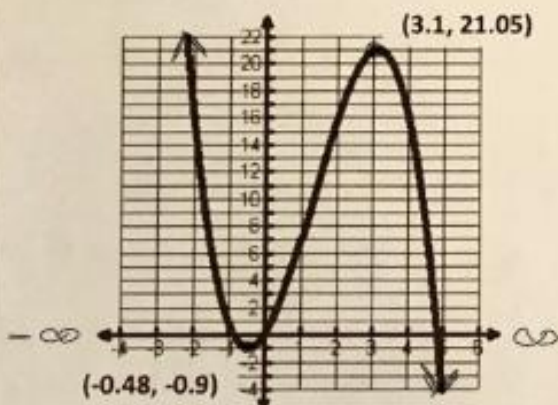
3. $f(x) = -x^3 + 4x^2 + 4x$

Rel. Max: $(3.1, 21.05)$ Rel. Min: $(-0.48, -0.9)$

Abs. Max: None Abs. Min: None

Inc: $(-\infty, 0.67) \cup (2, \infty)$ Dec: $(0.67, 2)$

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$



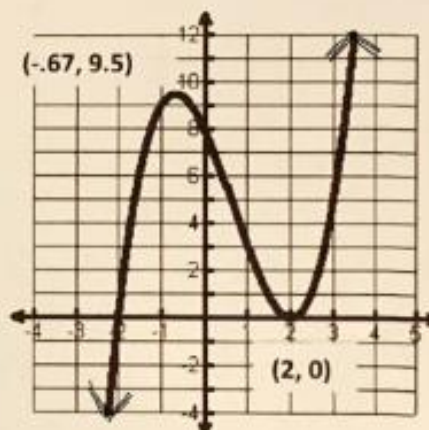
4. $f(x) = x^3 - 2x^2 - 4x + 8$

Rel. Max: $(-0.67, 9.5)$ Rel. Min: $(2, 0)$

Abs. Max: None Abs. Min: None

Inc: $(-\infty, 0.67) \cup (2, \infty)$ Dec: $(0.67, 2)$

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$



Name: _____

Date: _____

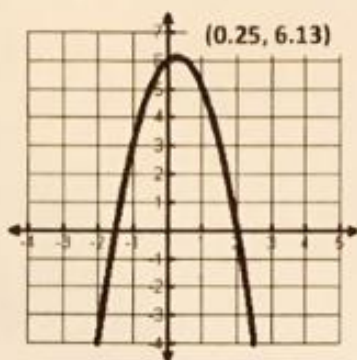
5. $f(x) = -2x^2 + x + 6$

Rel. Max: None Rel. Min: none

Abs. Max: (0.25, 6.13) Abs. Min: None

Inc: $(-\infty, 0.25)$ Dec: $(0.25, \infty)$

Domain: $(-\infty, \infty)$ Range: $(-\infty, 6.13)$



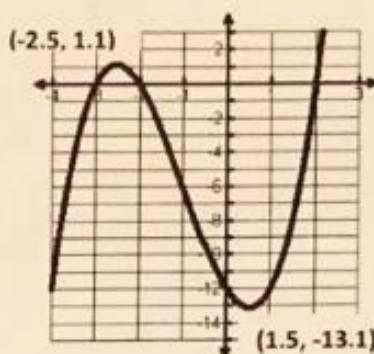
6. $f(x) = x^3 + 3x^2 - 4x - 12$

Rel. Max: $(-2.5, 1.1)$ Rel. Min: $(1.5, -13.1)$

Abs. Max: None Abs. Min: None

Inc: $(-\infty, -2.5)$ $(1.5, \infty)$ Dec: $(-2.5, 1.5)$

Domain: $(-\infty, \infty)$ Range: $(-\infty, \infty)$



Identify the **y-intercept** and the **# of zeros**

7. $f(x) = x^3 - 16$

Y-Int: -16 # of Zeros: 3

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

Y-Int: -1 # of Zeros: 2

9. $f(x) = 9x^4 + x^3 - 3x - 10$

Y-Int: -10 # of Zeros: 4

10. $f(x) = x^3 - x - 2$

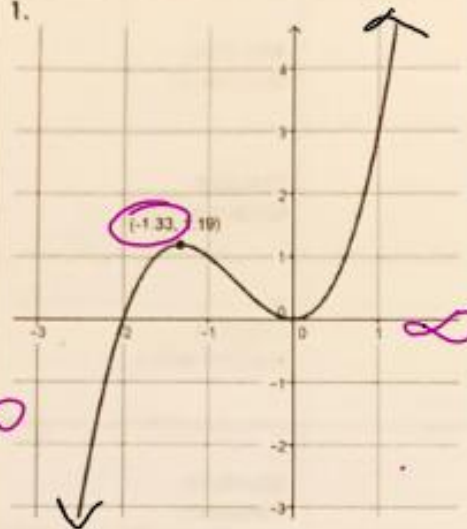
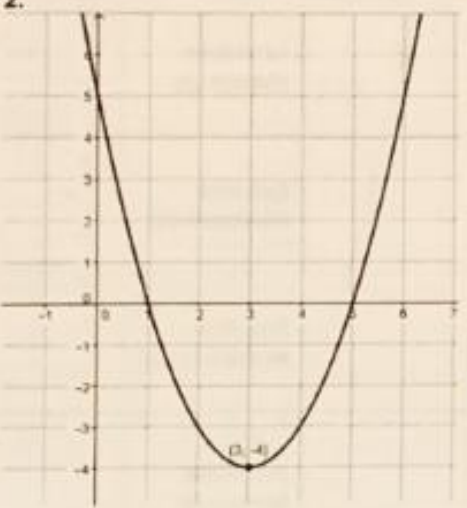
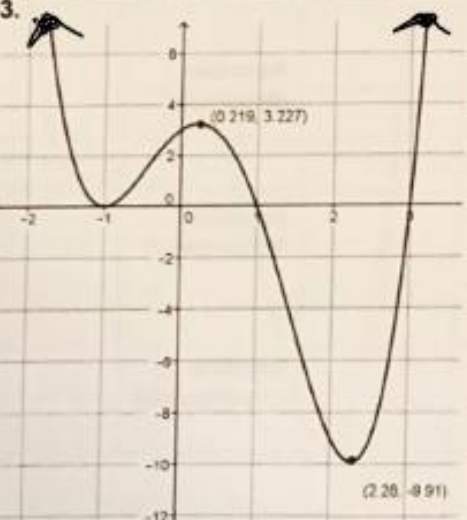
Y-Int: -2 # of Zeros: 3

11. $f(x) = 7x$

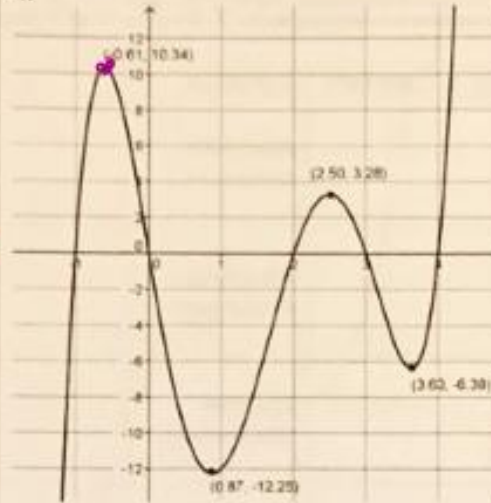
Y-Int: 0 # of Zeros: 1

12. $f(x) = -2x^3 + 7$

Y-Int: 7 # of Zeros: 3

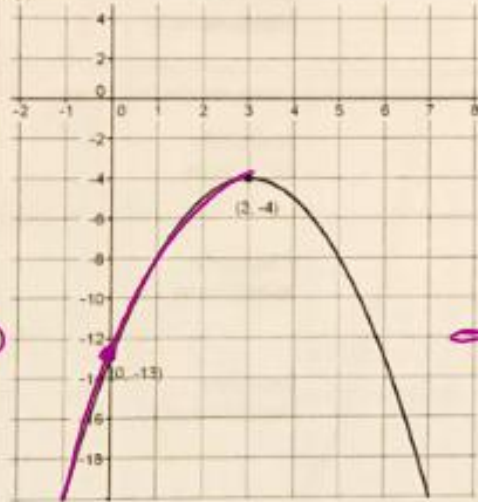
	Increasing, Decreasing, & Constant	Extremas	
1. 	Increasing	$(-\infty, -1.33]$ $[0, \infty)$	Absolute Minimum None
	Decreasing	$[-1.33, 0]$	Absolute Maximum None
	Constant		Relative Minimum(s) $(0, 0)$
	End Behavior	$x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$	Relative Maximum(s) $(-1.33, 1.19)$
2. 	Increasing	$(-\infty, 3]$	Absolute Minimum $(3, -4)$
	Decreasing	$[3, \infty)$	Absolute Maximum None
	Constant		Relative Minimum(s) None
	End Behavior	$x \rightarrow -\infty, f(x) \rightarrow \infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$	Relative Maximum(s) None
3. 	Increasing	$[-1, 0.219]$ $[2.28, \infty)$	Absolute Minimum $(2.28, -9.91)$
	Decreasing	$(-\infty, -1]$ $[0.219, 2.28]$	Absolute Maximum None
	Constant		Relative Minimum(s) $(-1, 0)$
	End Behavior	$x \rightarrow -\infty, f(x) \rightarrow \infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$	Relative Maximum(s) $(0.219, 3.227)$

4.



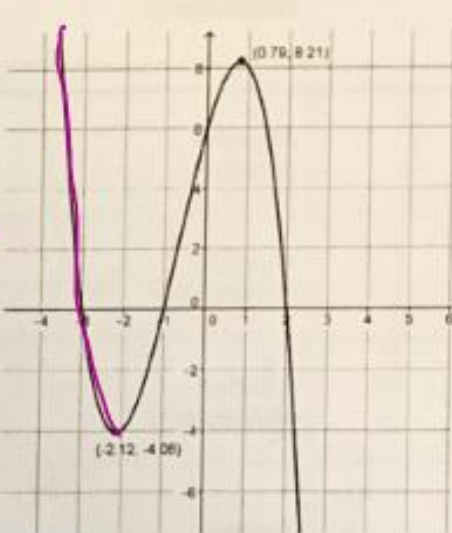
Increasing	$(-\infty, -0.61)$ $(0.87, 2.5)$ $(3.63, \infty)$	Absolute Minimum	None
Decreasing	$(-0.61, 0.87)$ $(2.5, 3.63)$	Absolute Maximum	None
Constant		Relative Minimum(s)	$(0.87, -12.25)$ $(3.63, -6.39)$
End Behaviour	$x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$	Relative Maximum(s)	$(-0.61, 10.34)$ $(2.50, 3.28)$

5.



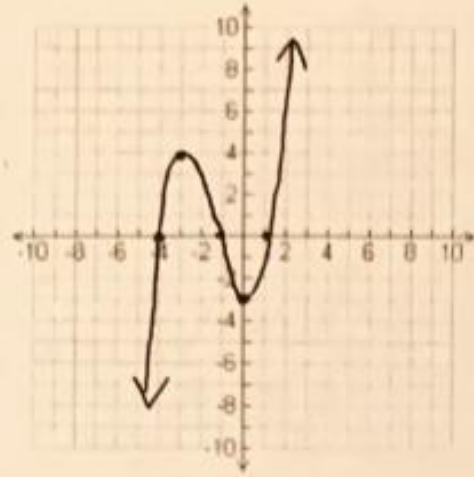
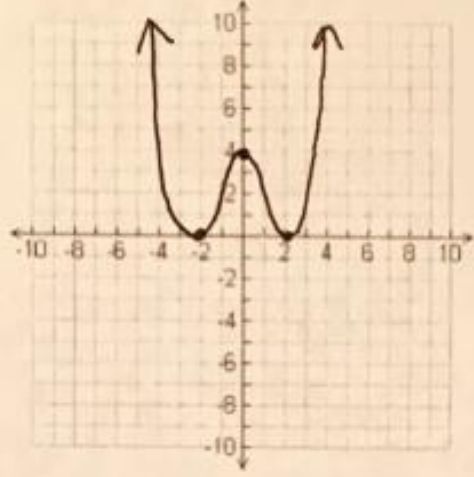
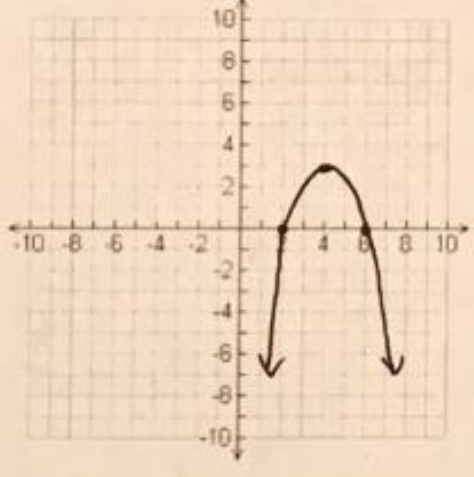
Increasing	$(-\infty, 3)$	Absolute Minimum	None
Decreasing	$(3, \infty)$	Absolute Maximum	$(3, -4)$
Constant		Relative Minimum(s)	None
	$x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$	Relative Maximum(s)	None

6.

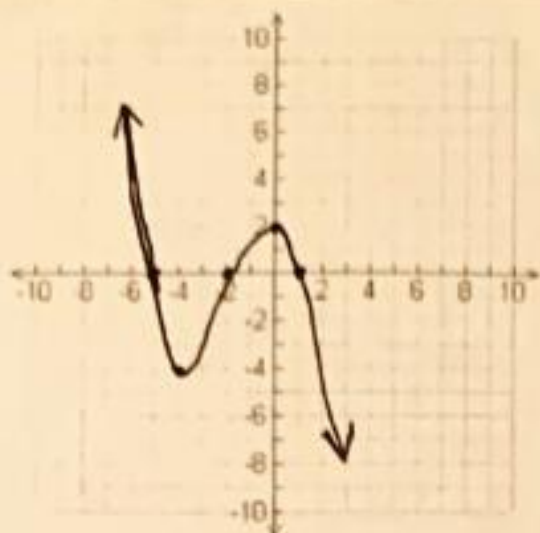


Increasing	$(-2.12, 0.79)$	Absolute Minimum	None
Decreasing	$(\infty, -2.12)$ $(0.79, \infty)$	Absolute Maximum	None
Constant		Relative Minimum(s)	$(-2.12, -4.06)$
	$x \rightarrow -\infty, f(x) \rightarrow \infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$	Relative Maximum(s)	$(0.79, 8.21)$

Maximums/Minimums and Intervals of Increasing & Decreasing of Graphs

<p>1.</p> 	<p>Relative Maximum _____</p> <p>Relative Minimum _____</p> <p>Absolute Maximum _____</p> <p>Absolute Minimum _____</p> <p>Interval(s) of Increasing _____</p> <p>Interval(s) of Decreasing _____</p>
<p>2.</p> 	<p>Relative Maximum _____</p> <p>Relative Minimum _____</p> <p>Absolute Maximum _____</p> <p>Absolute Minimum _____</p> <p>Interval(s) of Increasing _____</p> <p>Interval(s) of Decreasing _____</p>
<p>3.</p> 	<p>Relative Maximum _____</p> <p>Relative Minimum _____</p> <p>Absolute Maximum _____</p> <p>Absolute Minimum _____</p> <p>Interval(s) of Increasing _____</p> <p>Interval(s) of Decreasing _____</p>

4.



Relative Maximum _____

Relative Minimum _____

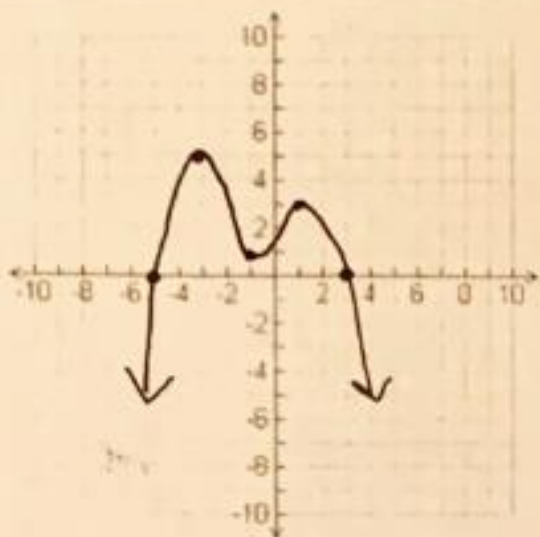
Absolute Maximum _____

Absolute Minimum _____

Interval(s) of Increasing _____

Interval(s) of Decreasing _____

5.



Relative Maximum _____

Relative Minimum _____

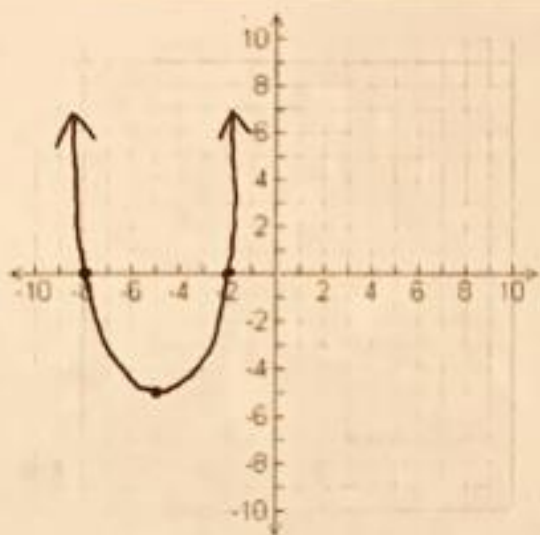
Absolute Maximum _____

Absolute Minimum _____

Interval(s) of Increasing _____

Interval(s) of Decreasing _____

6.



Relative Maximum _____

Relative Minimum _____

Absolute Maximum _____

Absolute Minimum _____

Interval(s) of Increasing _____

Interval(s) of Decreasing _____