Name:_____

8.4 Graph Attributes

For each graph, find all local extrema and label as a local min or max. List the intervals on which the function is increasing and decreasing and the end behavior of the function. Assume all graphs have arrows at the ends.

1.

increasing
$(1,4) \cup (6,\infty)$

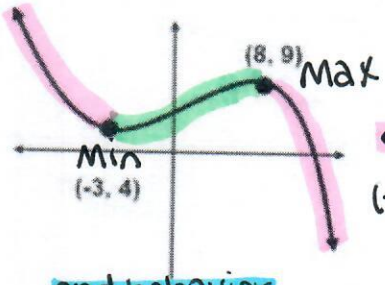
decreasing
$(-\infty,1) \cup (4,6)$

Local min(s)
-14 @ $x=1$
7 @ $x=6$

Local max
39 @ $x=4$

end behavior $\lim_{x\to-\infty} = \infty$ $\lim_{x\to\infty} = \infty$

2.



increasing
$(-3, 8)$

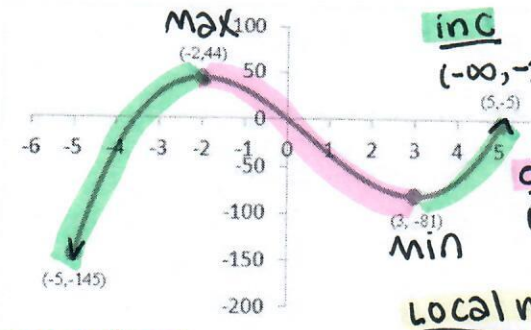
decreasing
$(-\infty,-3) \cup (8,\infty)$

end behavior
$\lim_{x\to-\infty} \infty$ $\lim_{x\to\infty} -\infty$

Local Mins
4 @ $x=-3$

Local Max
9 @ $x=8$

3.



inc
$(-\infty,-2) \cup (3,\infty)$

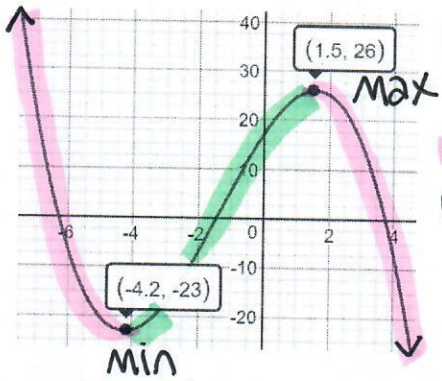
dec
$(-2,3)$

Local min
-81 @ $x=3$

Local max
44 @ $x=-2$

end behavior
$\lim_{x\to-\infty} -\infty$ $\lim_{x\to\infty} \infty$

4.



inc
$(-4.2, 1.5)$

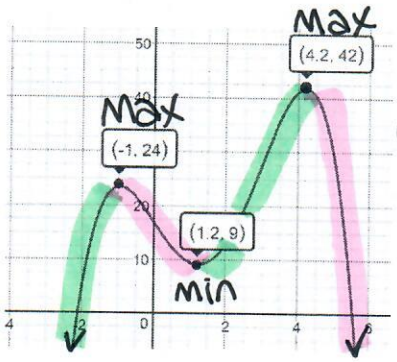
dec
$(-\infty,-4.2) \cup (1.5,\infty)$

Local min
-23 @ $x=-4.2$

Local max
26 @ $x=1.5$

end behavior
$\lim_{x\to-\infty} \infty$ $\lim_{x\to\infty} -\infty$

5.



inc
$(-\infty,-1) \cup (1.2, 4.2)$

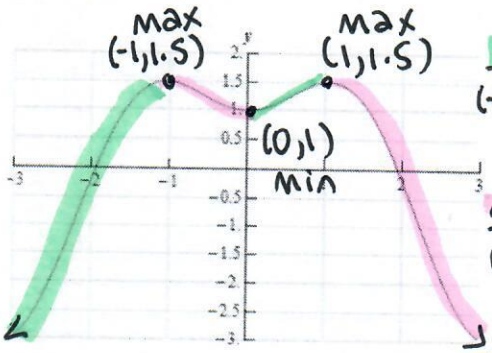
dec
$(-1, 1.2) \cup (4.2,\infty)$

Local min
9 @ $x=1.2$

Local max
24 @ $x=-1$
42 @ $x=4.2$

end behavior
$\lim_{x\to-\infty} -\infty$ $\lim_{x\to\infty} \infty$

6.



inc
$(-\infty,-1) \cup (0,1)$

dec
$(-1,0) \cup (1,\infty)$

Mins
1 @ $x=0$

Max
1.5 @ $x=-1$
1.5 @ $x=1$

end behavior
$\lim_{x\to-\infty} -\infty$ $\lim_{x\to\infty} -\infty$

Using a graphing calculator, determine all relative maxima and relative minima

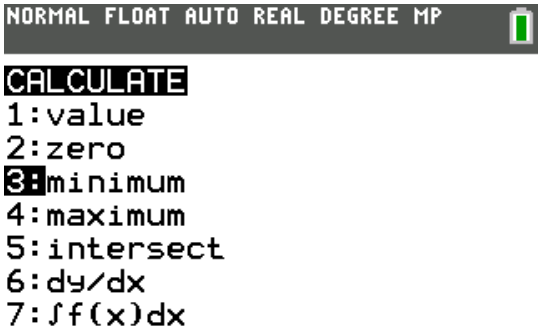
7. $f(x) = x^2 - 3x + 2$

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

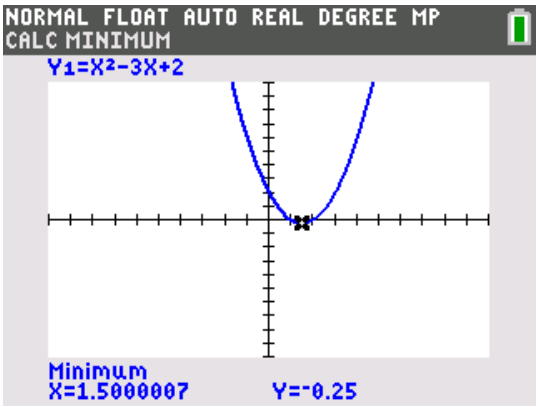
9. $f(x) = -x^4 + x^3 + 3x^2 - 2x + 4$

2nd TRACE

pick 3:minimum
or 4: maximum

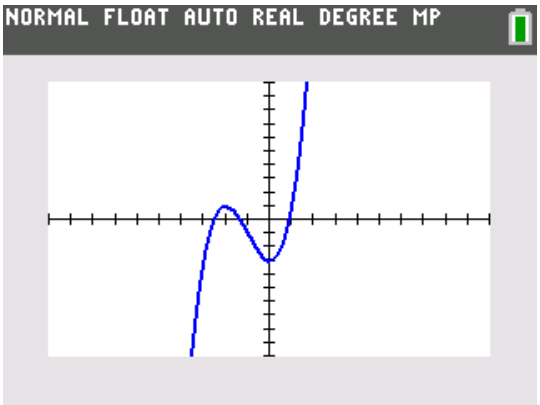


7



min: -0.25 @ $x=1.5$

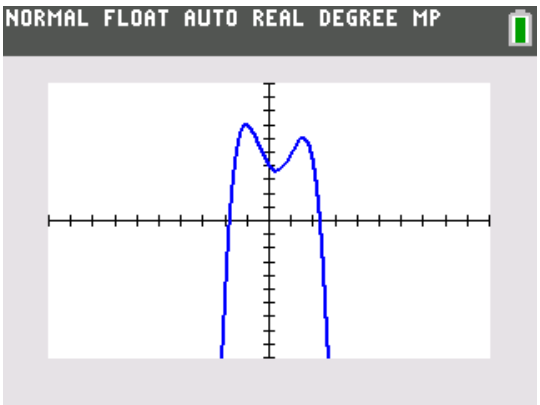
8



max: 1 @ $x=-2$

min: -3 @ $x=0$

9



max: 7.039 @ $x=-1.076$
6.066 @ $x=1.520$

min: 3.689 @ $x=0.306$