Name:_____

7.6 Graph Attributes

For each equation, list the maximum number of extrema the graph of the polynomial could have. Check on your calculator.

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

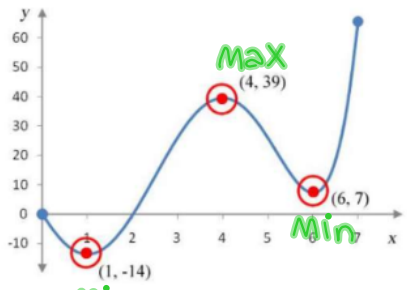
2. $f(x) = -3x + x^2 + 2$ 1

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

4. $f(x) = x^{12} + x^5 - x^4 + x^3 + 3x^2 - 2x + 4$ 11

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.

5.

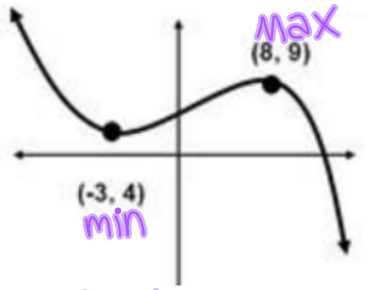


Inc: $(1,4) \cup (6,\infty)$

Dec: $(-\infty,1) \cup (4,6)$

EB: $\lim_{x\to-\infty} \infty$ $\lim_{x\to\infty} \infty$

6.

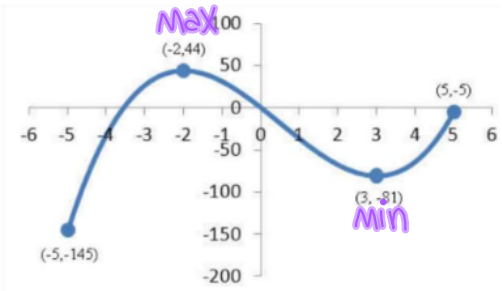


Inc: $(-3,8)$

Dec: $(-\infty,-3) \cup (8,\infty)$

EB: $\lim_{x\to-\infty} \infty$ $\lim_{x\to\infty} -\infty$

7.

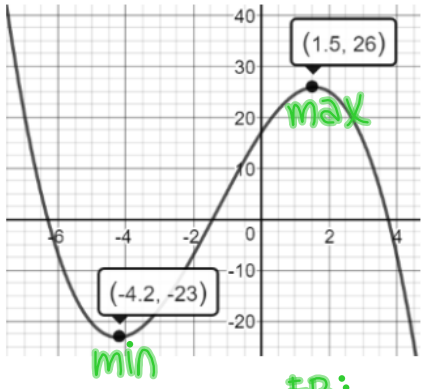


Inc: $(-\infty,-2) \cup (3,\infty)$

Dec: $(-2,3)$

EB: $\lim_{x\to-\infty} -\infty$ $\lim_{x\to\infty} \infty$

8.

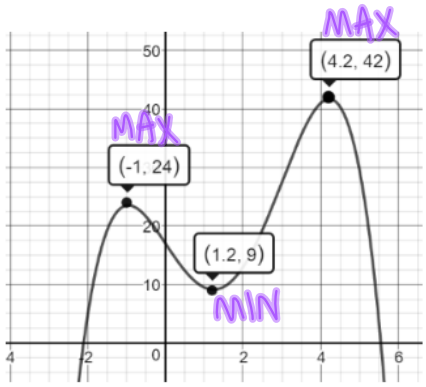


Inc: $(-4.2, 1.5)$

Dec: $(-\infty,-4.2) \cup (1.5,\infty)$

EB: $\lim_{x\to-\infty} \infty$ $\lim_{x\to\infty} -\infty$

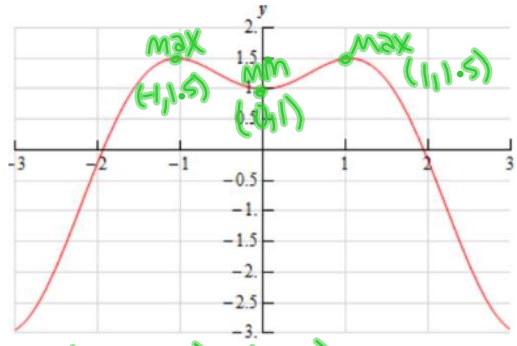
9.



Inc: $(-\infty,-1)\cup(1.2,4.2)$
Dec: $(-1,1.2)\cup(4.2,\infty)$

EB: $\lim_{x\to-\infty} -\infty$ $\lim_{x\to\infty} -\infty$

10.



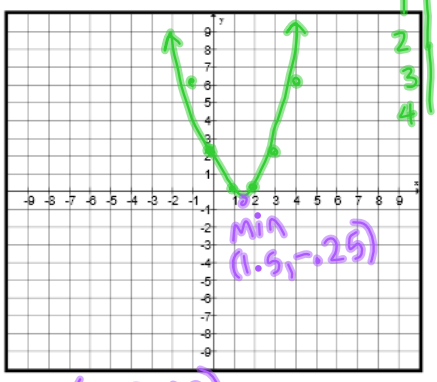
Inc: $(-\infty,-1)\cup(0,1)$
Dec: $(-1,0)\cup(1,\infty)$

EB: $\lim_{x\to-\infty} -\infty$ $\lim_{x\to\infty} \infty$

Graph the function to determine all relative maxima, relative minima, the intervals on which each function is increasing and decreasing, and the end behavior.

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

x	y
-1	6
0	2
1	0
2	0
3	2
4	6

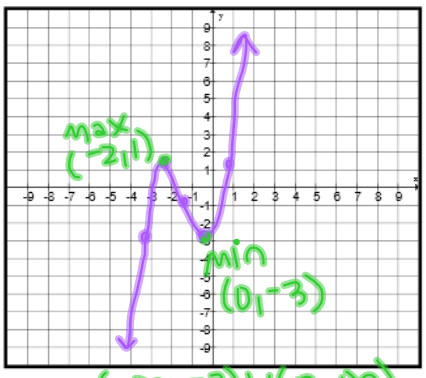


Inc: $(1.5,\infty)$
Dec: $(-\infty,1.5)$

EB: $\lim_{x\to-\infty} \infty$ $\lim_{x\to\infty} \infty$

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

x	y
-3	-3
-2	1
0	-3
1	1



Inc: $(-\infty,-2)\cup(0,\infty)$
Dec: $(-2,0)$

EB: $\lim_{x\to-\infty} -\infty$ $\lim_{x\to\infty} \infty$