

Honors Math 3 – Graphing Polynomials

Fery 2011

Use a graphing calculator to graph each function. Determine whether the function has a maximum or minimum or if there are relative maxima or minima. Determine where the function is increasing or decreasing and describe the end behavior.

★ ABSOLUTE

function	max or min?	rel max or min?	increasing at...	decreasing at...	end behavior
1. $f(x) = x^5 - x^3$ 	none	max at $x = -1$ min at $x = 1$	$(-\infty, -1)$ $(1, \infty)$	$(-1, 1)$	as $x \rightarrow -\infty$ $y \rightarrow -\infty$ as $x \rightarrow \infty$ $y \rightarrow \infty$
2. $f(x) = x^3 + 2x$ 	none	none	$(-\infty, \infty)$	—	as $x \rightarrow -\infty$ $y \rightarrow -\infty$ as $x \rightarrow \infty$ $y \rightarrow \infty$
3. $f(x) = -2x^3 + x^2 + 2x$ 	none	min at $x = 0.43$ max at $x = 0.77$	$(-\infty, 0.43)$ $(0.77, \infty)$	$(0.43, 0.77)$	as $x \rightarrow -\infty$ $y \rightarrow -\infty$ as $x \rightarrow \infty$ $y \rightarrow -\infty$
4. $f(x) = -4x^3 - 4$ 	none	none	—	$(-\infty, \infty)$	as $x \rightarrow -\infty$ $y \rightarrow \infty$ as $x \rightarrow \infty$ $y \rightarrow -\infty$
5. $f(x) = x^4 - 6x^3$ <i>★ change your graph!</i> <i>change your graph!</i> 	min at $x = 4.5$	none	$(4.5, \infty)$	$(-\infty, 4.5)$	as $x \rightarrow -\infty$ $y \rightarrow \infty$ as $x \rightarrow \infty$ $y \rightarrow \infty$
6. $f(x) = x^4 - 20x^2 + 64$ 	min at $x = -3.16$ min at $x = 3.16$	max at $x = 0$	$(-\infty, -3.16)$ $(3.16, \infty)$	$(-3.16, 3.16)$ $(0, 3.16)$	as $x \rightarrow -\infty$ $y \rightarrow \infty$ as $x \rightarrow \infty$ $y \rightarrow \infty$

★ change
YMIN &
YMAX to
see they!
see graph!