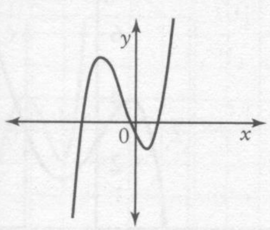
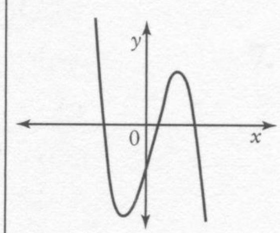
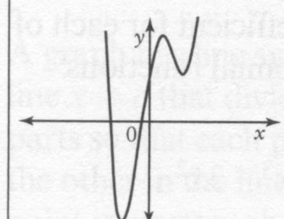
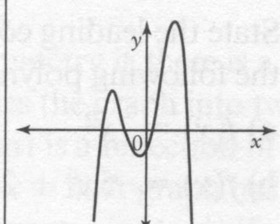
KEY CONCEPTS

- The degree of a polynomial function $f(x) = a_nx^n + a_{n-1}x^{n-1} + a_{n-2}x^{n-2} + \cdots + a_2x^2 + a_1x + a_0$ determines the end behaviour as x approaches positive infinity ($x \to \infty$) and as x approaches negative infinity ($x \to -\infty$).
- The leading coefficient is the coefficient of the term that is used to determine the degree of a polynomial function. It may be a positive number or a negative number.
- A polynomial function may be an odd-degree polynomial or an even-degree polynomial, as shown in the chart.

	Odd-Degree Polynomial		Even-Degree Polynomial	
Leading Coefficient	positive	negative	positive	negative
End Behaviour	as $x \to -\infty$, $y \to -\infty$; as $x \to \infty$, $y \to \infty$ (similar to the graph of $y = x$)	as $x \to -\infty$, $y \to \infty$; as $x \to \infty$, $y \to -\infty$ (similar to the graph of $y = -x$)	as $x \to -\infty$, $y \to \infty$; as $x \to \infty$, $y \to \infty$ (similar to the graph of $y = x^2$)	as $x \to -\infty$, $y \to -\infty$; as $x \to \infty$, $y \to -\infty$ (similar to the graph of $y = -x^2$)
Sketch				
Domain	$\{x \in \mathbb{R}\}$		$\{x \in \mathbb{R}\}$	
Range	$\{y \in \mathbb{R}\}$		$\{y \in \mathbb{R}, y \geq a\}$	$\{y \in \mathbb{R}, y \leq a\}$
Maximum/ Minimum Value	neither a maximum value nor a minimum value		minimum value is a	maximum value is a