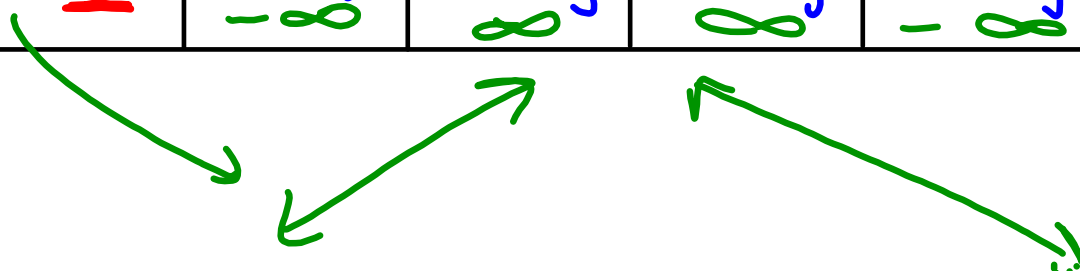


Function	Degree	Name	Sketch General Shape		Max. Turns	Number of Zeros	End Behavior	
			$a_n > 0$	$a_n < 0$			$a_n > 0$	$a_n < 0$
★ $y = -5$	0	constant	\leftrightarrow	\leftrightarrow	0	0	$\infty \rightarrow \infty$	$\infty \rightarrow \infty$
★ $y = 3x + 2$	1	linear	\nearrow	\searrow	0	1	$x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$	$x \rightarrow -\infty, f(x) \rightarrow \infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$
★ $y = x^2 - 2$	2	quadratic	\cup	\cap	1	2	$x \rightarrow -\infty, f(x) \rightarrow \infty$ $x \rightarrow \infty, f(x) \rightarrow \infty$	$x \rightarrow -\infty, f(x) \rightarrow -\infty$ $x \rightarrow \infty, f(x) \rightarrow -\infty$
★ $y = 3x^3 - 12x + 4$								
★ $y = x^4 + 2x^3 - 5x^2 - 6x$								
★ $y = 6x^5 + 5x^4 - 15x^3 - 10x^2 + 5x + 2$								

END BEHAVIOR OF A POLYNOMIAL FUNCTION

	a is positive ^{leading coeff.}		a is negative	
degree	left	right	left	right
think parabolic <u>n is even</u>	rising ∞	rising ∞	falling $-\infty$	falling $-\infty$
think linear <u>n is odd</u>	falling $-\infty$	rising ∞	rising ∞	falling $-\infty$



Practice: Describe the end behavior of each function below.

1. $-2x^{\boxed{5}} + 3x^2 - x - 5$ odd
↖ neg. coeff. Left: as $x \rightarrow -\infty$ $f(x) \rightarrow \infty$
Right: as $x \rightarrow \infty$ $f(x) \rightarrow -\infty$

2. $6x^{\boxed{4}} + x^3 - 2x^2 - 4x + 1$ even
↖ pos. coeff. Left: as $x \rightarrow -\infty$ $f(x) \rightarrow \infty$
Right: as $x \rightarrow \infty$ $f(x) \rightarrow \infty$

3. $-7x^6 + 8x^3 - 5$

4. $5x^3 + x^2 - x - 9$