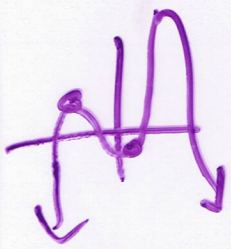
Example #1: $g(x) = -x^4 + 10x^2 + 5x - 4$

P319(b)

Matches Graph (i)



Graph extends from quadrant 3 to quadrant 4 with a positive/negative leading coefficient.

Number of:	x intercepts	How does the number of x-intercepts relate to the degree?
	4	same
absolute max	local max	How does the total number of max and min points relate to the degree?
1	1	one less
absolute min	local min	
0	1	
The y-intercept is -4.		

Finite Differences:

For a polynomial function of degree n, where n is a positive integer, the n^{th} differences:

- are equal (or constant)
- have the same sign as the leading coefficient
- are equal to $\mathbf{a[n * (n-1) * (n-2) * \ldots * 2 * 1]}$, where a is the leading coefficient.

$a n!$

Example #2: From the table of values, use the finite differences to determine:

a) the degree 3 b) the sign of the leading coefficient Negative c) the value of the leading coefficient.

x	y
-3	122
-2	78
-1	60
0	50
1	30
2	-18
3	-112
4	-270

$-44, -16, -10, -20, -48, -94, -158$

$26, 8, -10, -28, -46$

$-18, -18, -18$

$-18 = a(3!)$

$-18 = a(6)$

$-3 = a$