

3.1 Characteristics of Polynomials

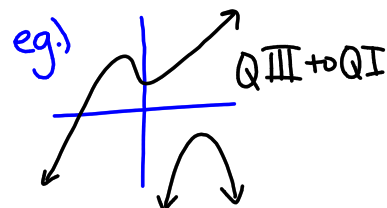
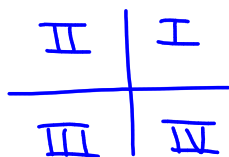
Types of Polynomial Functions (the variable has a whole number exponent):

- Constant: $f(x) = 3$
 $x = -2$ Degree: 0
- Linear: $f(x) = 2x + 1$ Degree: 1
- Quadratic: $f(x) = x^2 + 6x + 8$
 $g(x) = (x+4)(x+2)$ Degree: 2
- Cubic: $f(x) = 2x^3 + 4x^2 + 5x + 6$
 $g(x) = (x+4)(x-5)(x+6)$ Degree: 3
- Quartic: $f(x) = 3x^4 - 2x^3 + x^2 = 7$
 $g(x) = 2(x^2+4)(x-1)(x-2)$ Degree: 4
- Quintic: $f(x) = x^5 - 20$
 $g(x) = (x^3 - 2x^2 + 3)(x+2)(x-3)$ Degree: 5



Characteristics:

- Degree: highest power on a variable.
- Leading Coefficient: coefficient on term with highest degree (descending order)
- Constant Term: # without a variable.
- X-Intercepts: zeros, solutions, roots
- End Behaviour: where does the function "start" and "end"



Investigate the End-Behaviour of Even Functions: x^2 and x^4

$a > 0$

$f(x) = x^2$

$ax^2 + bx + c$

QII to QI

$a < 0$

QIII to QIV

$a > 0$

$f(x) = x^4$

relative minimum

relative maximum

absolute min.

QII to QI

$a < 0$

QIII to QIV

Investigate the End-Behaviour of Odd Functions: x^3 and x^5

$a > 0$

$f(x) = x^3$

QIII to QI

$a < 0$

QII to QIV

Linear: degree: 1

$f(x) = x^5$

QIII to QI

QII to QIV

Worksheet.
Pg. 114 #1, 2, 4, 6, 7, 9.