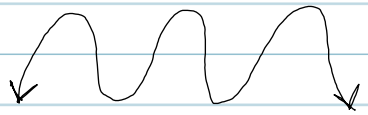
Section 5.1 Polynomials

$f(x) = ax^n + bx^{n-1} + \ldots z$

$f(x) = 3x^2 - 2x + 1$



Powers = positive whole #'s

$f(x) = 2(x-3)(x+2)^2$

or

$f(x) = 2x^3 + 2x^2 - 16x + 24$

$(2x-6)(x^2+4x+4)$

$2x^3 + 8x^2 + 8x$

$-6x^2 - 24x - 24$

$2x^3 + 2x^2 - 16x - 24$

degree = n = highest power = 3

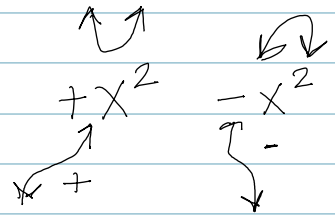
max # of crossing pts = $n = 3$

max # of turning pts = $n-1 = 2$ (max/min)

end behavior

$x^2 \rightarrow$ even

$x^3 \rightarrow$ odd



power function = $ax^n = 2x^3$

like: $+x^3$

Zero (x-int)

(root)

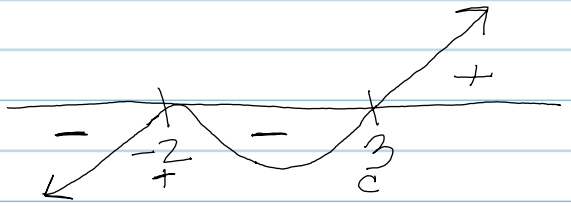
$x - 3 = 0$

$x = 3$

$x + 2 = 0$

$x = -2$

Zero:	-2	3
Multiplicity:	2	1
Cross/touch:	T	C



even multiplicity → touch
odd multiplicity → cross

test pt = $f(-3) = -2(-3-3)(-3+2)^2$
$= (-)$
$(+)(-)(-)(-)$

0 1 -2 3 -5

$$f(x) = -3x(x-1)^4(x+2)^8(x-3)^5(x+5)^7$$

$f(x) = -3x^{25} + \dots$

degree: $1+4+8+5+7 = 25$

Max # of crossing pts: 25

Max # of turning pts: $25-1 = 24$

Power function: $-3x^{25}$

like: $-x^3$

Zeros:	-5	-2	0	1	3
mult:	7	8	1	4	5
C/T:	C	T	C	T	C