

$$(2x-1)(x+3)^2(3x+5)$$

L.C. 6

Degree: 4

4-int: $(-1)(3)^2(5)$
 $(0, -45)$

Sep 8-8:42 AM

How is the degree of the function related to the number of U-turns?

- Most of functions,
of u-turns = degree - 1
 - if not < degree - 1
- Rule: Maximum # of
u-turns = degree - 1


Sep 8-9:09 AM

How is the end behavior of the function related to the degree of the function? Does the leading coefficient matter? If so, in what way is the graph affected?

- If degree is even, end behaviors are the same
- + L.C. \Rightarrow end behaviors $\rightarrow +\infty$
- - L.C. \Rightarrow end behaviors $\rightarrow -\infty$

If degree is odd, end behaviors are opposite

- + L.C. \Rightarrow starts at $-\infty$, ends at $+\infty$
- - L.C. \Rightarrow starts at $+\infty$, ends at $-\infty$



Sep 8-9:09 AM

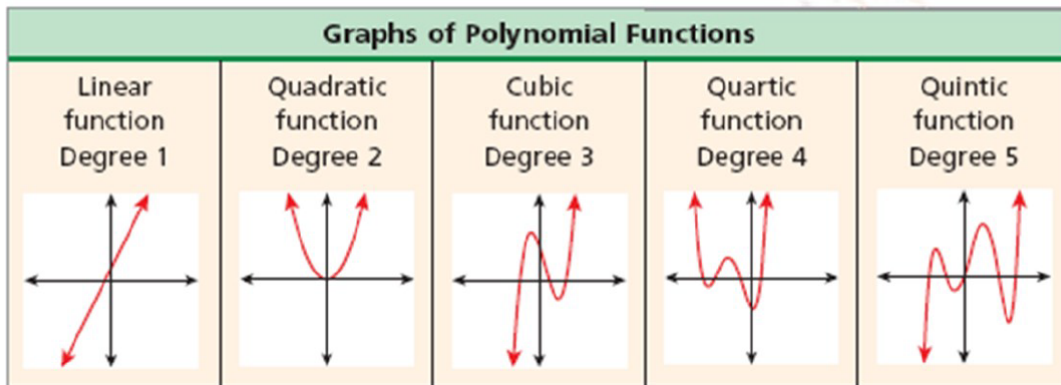
How is the number of real zeros related to the degree of the function?

- # of real zeros \leq degree

Rule: Max # of real zeros = degree

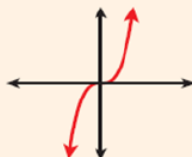
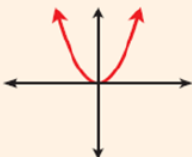
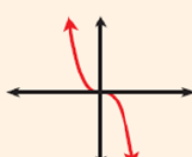

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Types of Polynomial Graphs



Sep 8-9:22 AM

Leading Coefficient, Even vs. Odd, and End Behavior

Polynomial End Behavior		
$P(x)$ has...	Odd Degree	Even Degree
Leading coefficient $a > 0$	As $x \rightarrow +\infty$, $P(x) \rightarrow +\infty$  As $x \rightarrow -\infty$, $P(x) \rightarrow -\infty$	As $x \rightarrow -\infty$, $P(x) \rightarrow +\infty$  As $x \rightarrow +\infty$, $P(x) \rightarrow +\infty$
Leading coefficient $a < 0$	As $x \rightarrow -\infty$, $P(x) \rightarrow +\infty$  As $x \rightarrow +\infty$, $P(x) \rightarrow -\infty$	As $x \rightarrow -\infty$, $P(x) \rightarrow -\infty$  As $x \rightarrow +\infty$, $P(x) \rightarrow -\infty$

Sep 8-9:23 AM

$$(x-3)^2(x+6)^5(2x+1)^3 \text{ degree} = 10$$

Degree — Equal to the sum of the degrees of all factors

Maximum Number of U-Turns = 1 less than the degree

Y-Intercept — value where $x = 0$.

Sep 8-9:24 AM