

8.4 Graphing Polynomial Functions

Features of graphs of polynomials

1. all polynomials are continuous (can be graphed without lifting your pencil).
2. polynomial of degree n has, at most, $n-1$ turns.
3. If the leading coefficient is positive, graph rises from left to right.
4. If the leading coefficient is negative, graph falls from left to right.

Ex: $f(x) = -\frac{1}{2}x + 4$
 $f(x) = x^2 + 2x - 3$

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Finding points

1. Zeros: x-intercepts
2. y-intercept: let $x=0$ and solve for y .

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

$$f(x) = (0)^2 + 2(0) - 3$$

$$f(x) = -3$$

$$(0, -3)$$

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- Functions are odd if the degree is odd.
They have opposite end behavior to the left and right.

- Functions are even if the degree is even.
They have the same end behavior to the left and right.

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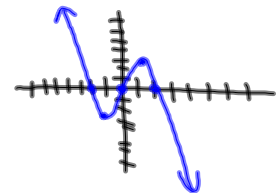
Ex: Before sketching, find how many turns, the left and right end behavior and the y-intercept. Sketch the graph and find the zeroes.

$$f(x) = -x^3 + 4x$$

$$f(0) = -(0)^3 + 4(0) = 0$$

2 turns
falls to the right
rises to the left

y-int: $(0, 0)$



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2-70 even

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