February 22, 2019

AA6 Polynomials

I can:

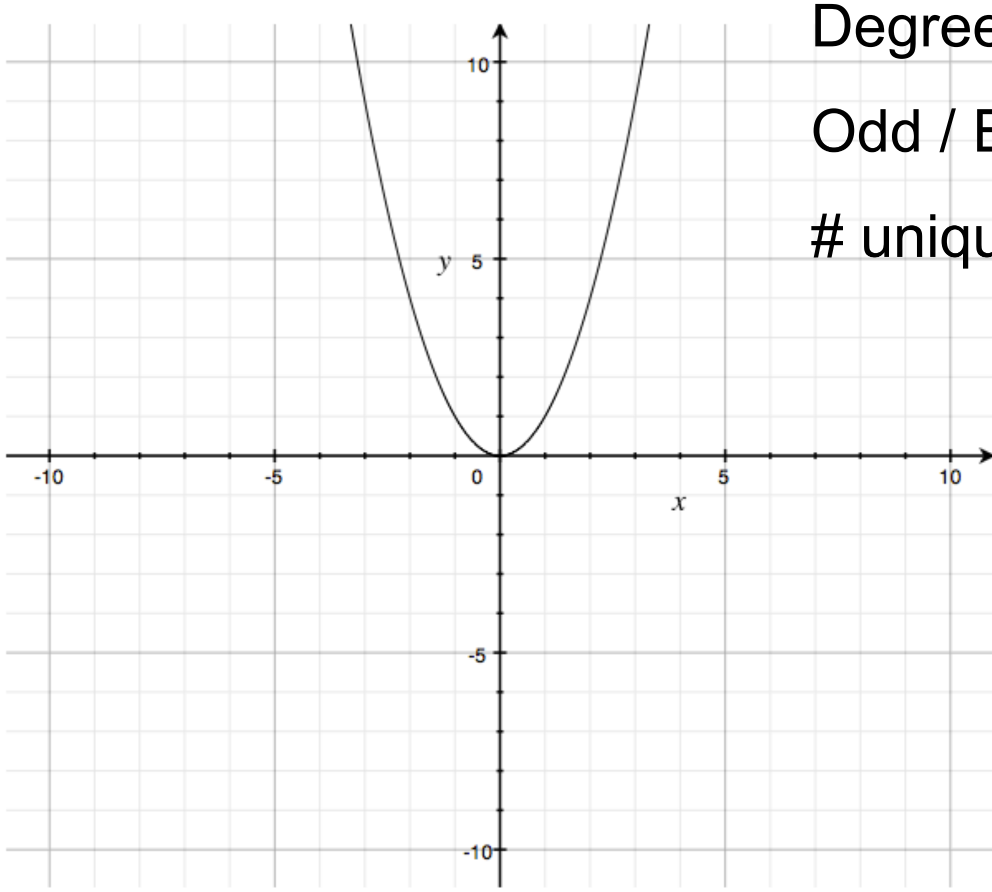
perform arithmetic operations on polynomials

understand the connection between zeros and factors

rewrite rational polynomial exressions

use polynomial identities

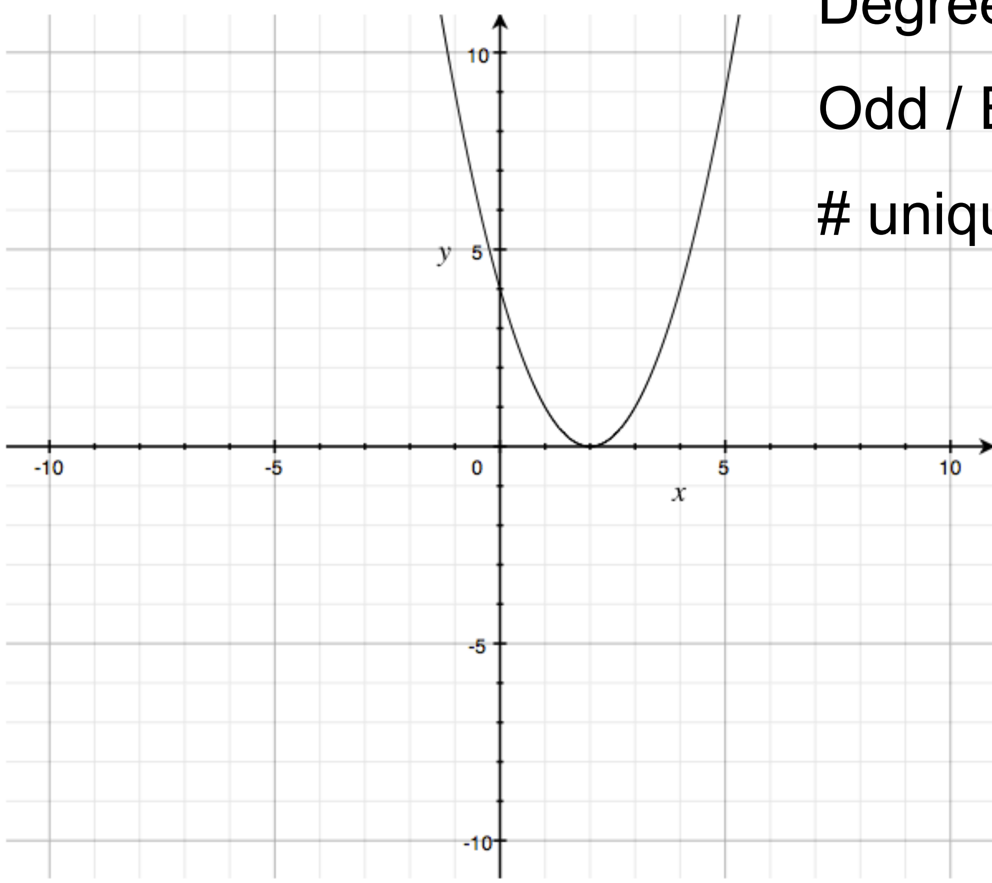
do other stuff with polynomials ...



Degree:

Odd / Even

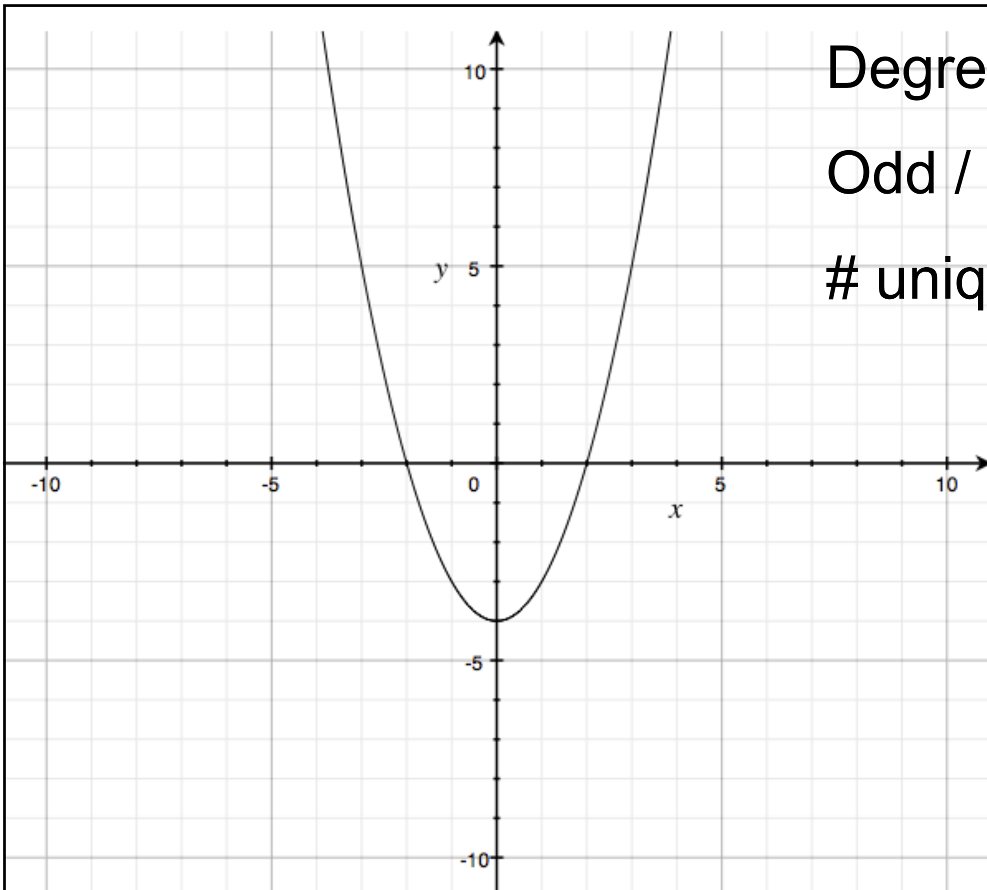
unique roots:



Degree:

Odd / Even

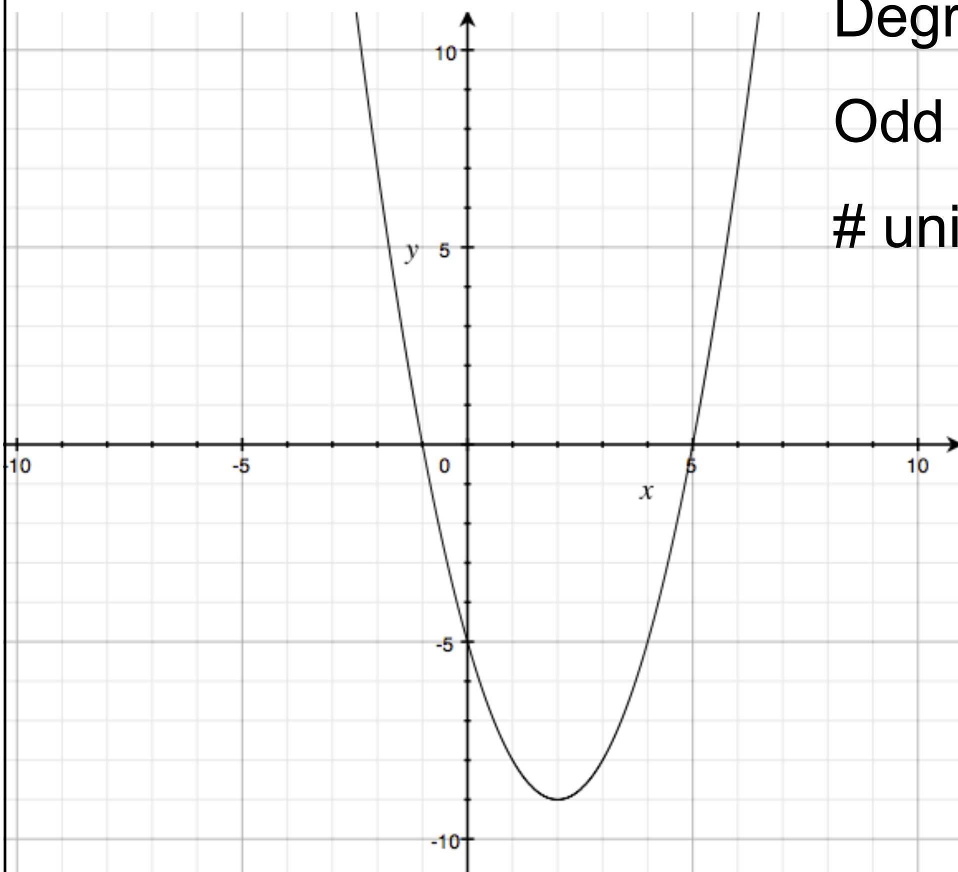
unique roots:



Degree:

Odd / Even

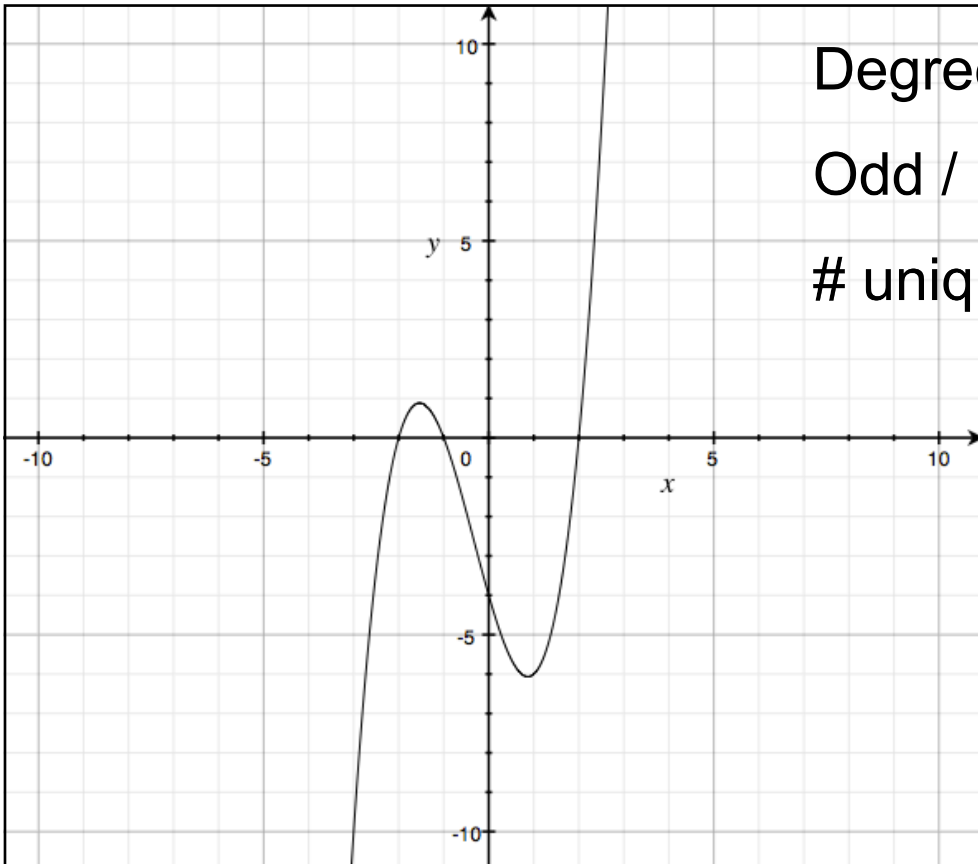
unique roots:



Degree:

Odd / Even

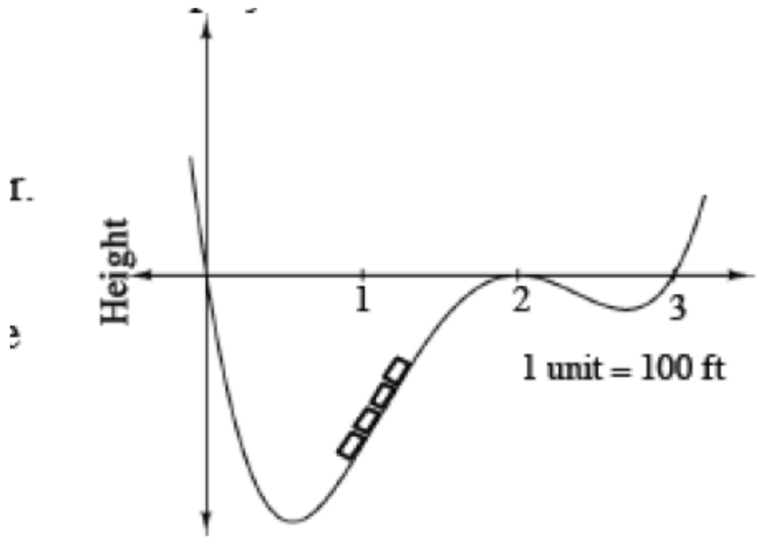
unique roots:



Degree:

Odd / Even

unique roots:


Height
1
2
3
1 unit = 100 ft

In your table groups investigate these polynomials.

Find: degree, # roots, odd/even, +ve/-ve.

Sketch them.

$P_1(x) = (x-2)(x+5)^2$

$P_2(x) = 2(x-2)(x+2)(x-3)$

$P_3(x) = x^4 - 21x^2 + 20x$

$P_4(x) = (x+3)^2(x+1)(x-1)(x-5)$

$P_5(x) = -0.1x(x+4)^3$

$P_6(x) = x^4 - 9x^2$

$P_7(x) = 0.2x(x+1)(x-3)(x+4)$

$P_8(x) = x^4 - 4x^3 - 3x^2 + 10x + 8$

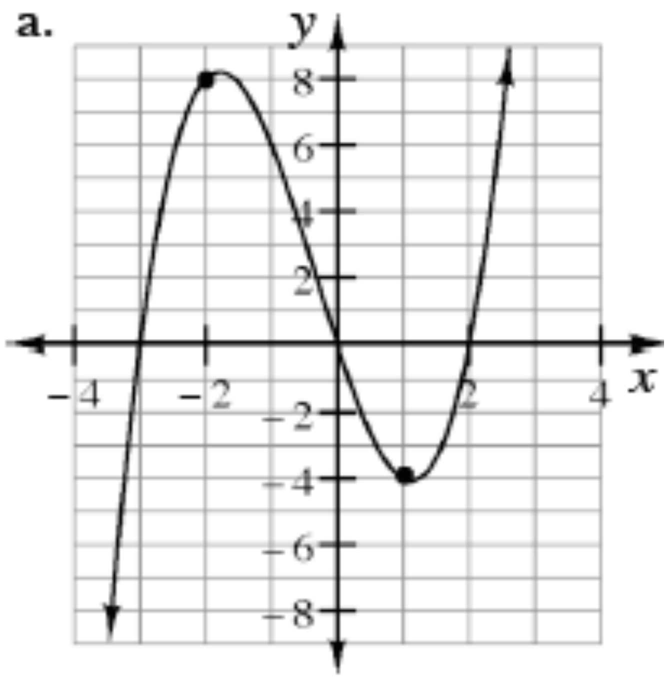
What can we predict from looking at the equation of a polynomial?
Why does this make sense?

Which form of a polynomial equation is most useful for making a graph?
What information does it give?

How can we use the equation to help predict what a useful window might be?

Which examples are most helpful in finding the connections between
the equation and the graph?

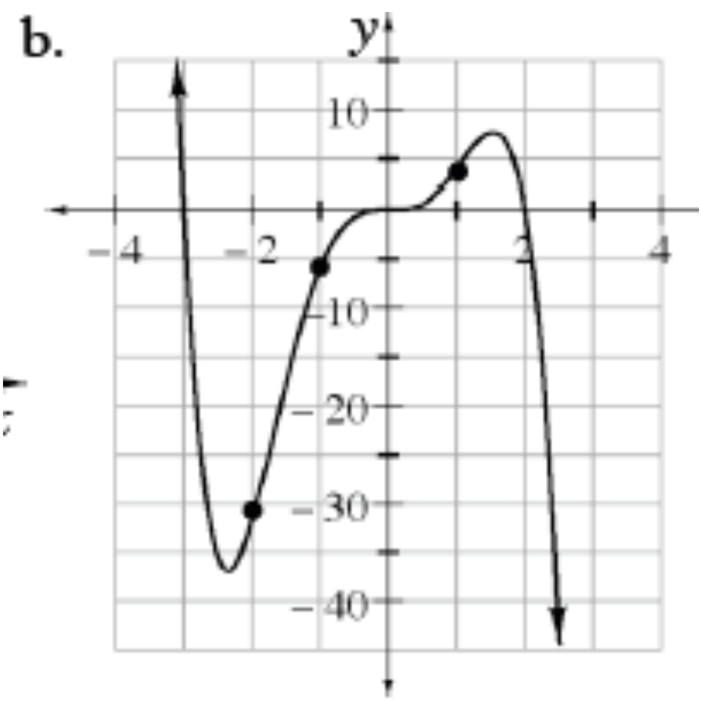
How does changing the exponent on one of the factors change the graph?



Degree:

Odd / Even

unique roots:

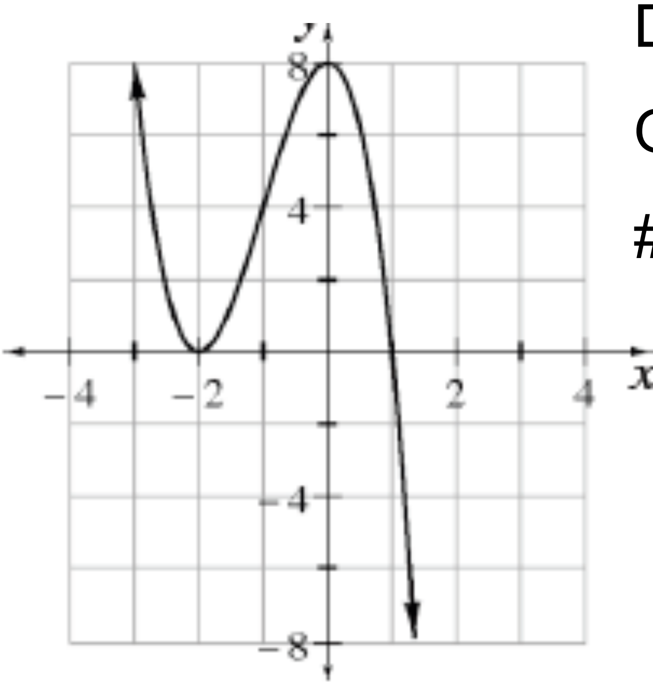


Degree:

Odd / Even

unique roots:

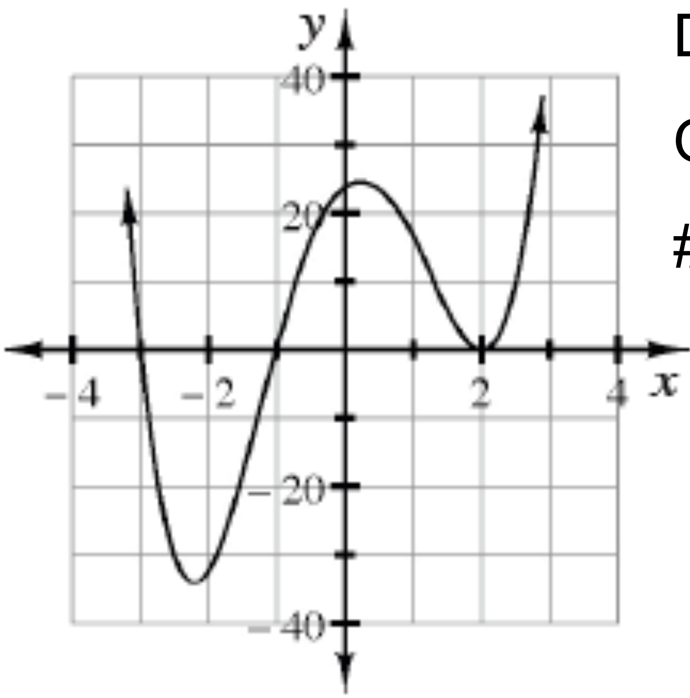
c.



Degree:

Odd / Even

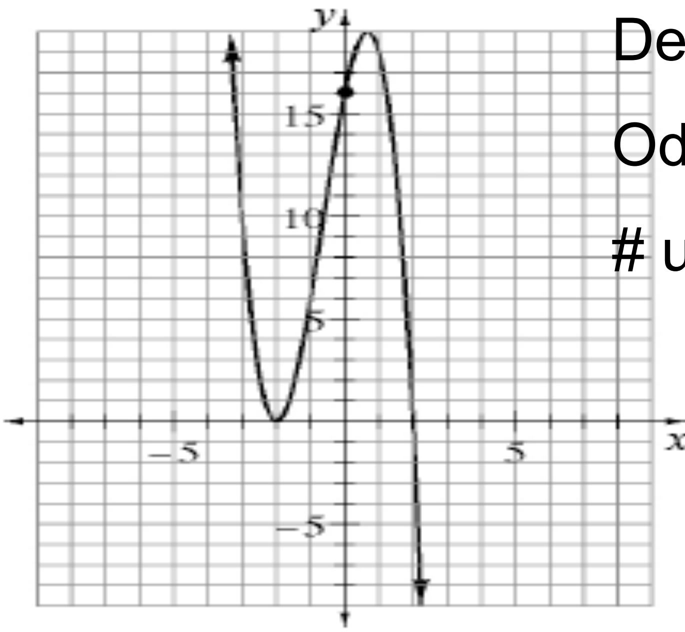
unique roots:



Degree:

Odd / Even

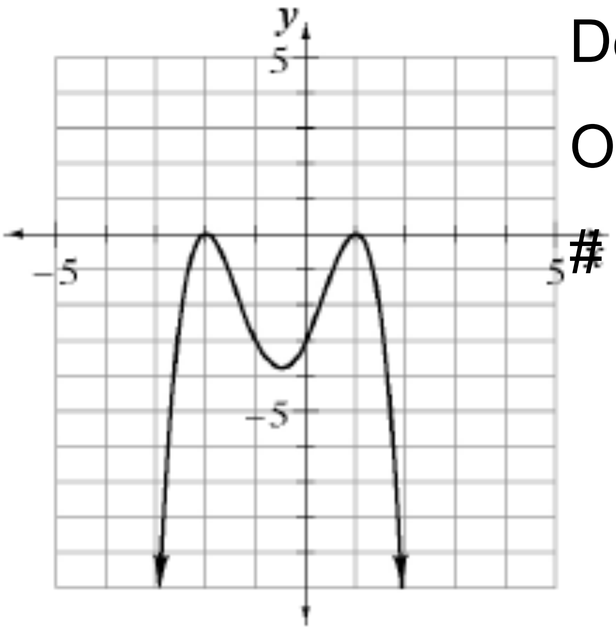
unique roots:



Degree:

Odd / Even

unique roots:

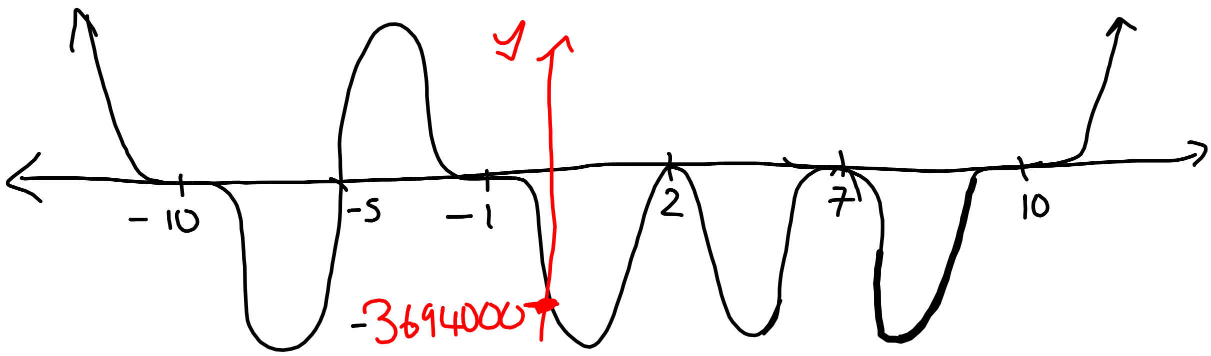


Degree:

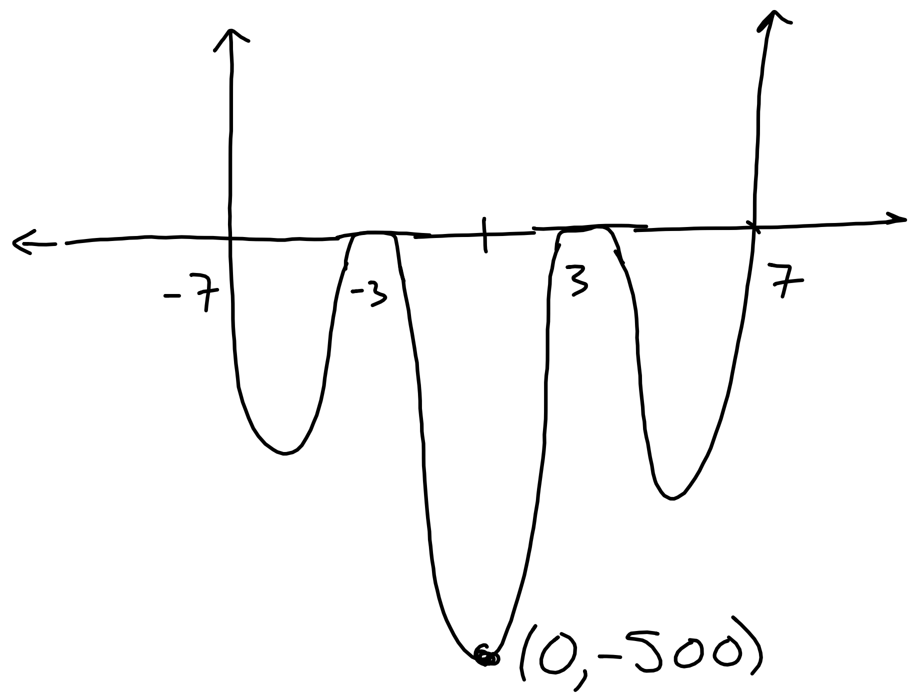
Odd / Even

unique roots:

Write a polynomial equation for a function with a graph that bounces off the x-axis at $(-1, 0)$, crosses it at $(4, 0)$, and goes through the point $(-2, -18)$.



y
-10
-5
-1
2
7
10
-3694000


-7
-3
3
7
(0,-500)

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

Next section....

Polynomial Operations

Polynomial Addition

$$(x^{10} - x^4 + 3x^2 + 2) + (x^3 - 4x^2 + 10x - 2)$$

Subtraction

$$(3x^5 - x^4 + 3x^2 - 4) - (2x^4 - 3x^2 + 2x - 2)$$

Multiplication

$$(3x^4 - 2x^3 + x - 4)(x^4 + 2x^3 - 5x^2 + 6)$$

February 22, 2019

fin