Bellwork:

Write a polynomial with roots
-3,5,4

$(x+3)(x-5)(x-4)$
$(x+3)(x^2-4x-5x+20)$
$(x+3)(x^2-9x+20)$
$x^3-9x^2+20x+3x^2-27x+60$
$\boxed{x^3-6x^2-7x+60}$

$f(x)=x^3-4x^2+8x+7$
+ real: 2, 0
$f(-x)=(-x)^3-4(-x)^2+8(-x)+7$
$=-x^3-4x^2-8x+7$
- real: 1

+ real	- real	imag	total
2	1	0	3
0	1	2	3

Chapter 5.8: Analyze Graphs of Polynomial Functions

Zero- If k is a zero (-3)

Factor- Then the factor is (x−k) (x+3)

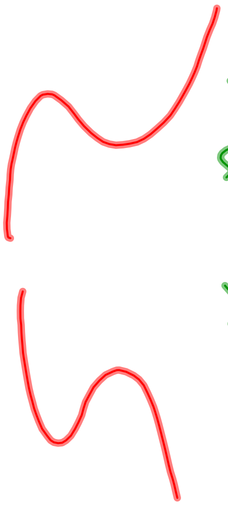
Solution- is when f(x)=0 x=k (x=-3)

X-intercept- where it crosses x-axis (k,0) of when y=0 (-3,0)

Roots - same as x-int + zeros, k {-3}

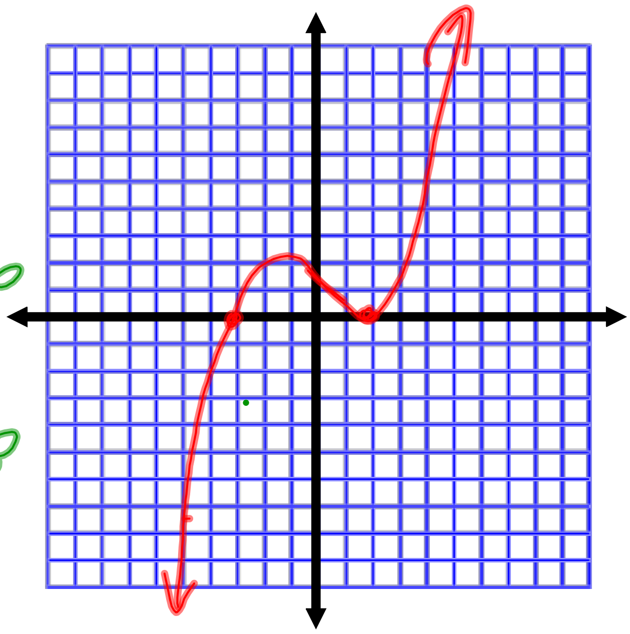
graph the function

$$f(x)=\frac{1}{6}(x+3)^{2}(x-2)^{3}$$



$x \to +\infty$
$f(x) \to +\infty$

$x \to -\infty$
$f(x) \to -\infty$



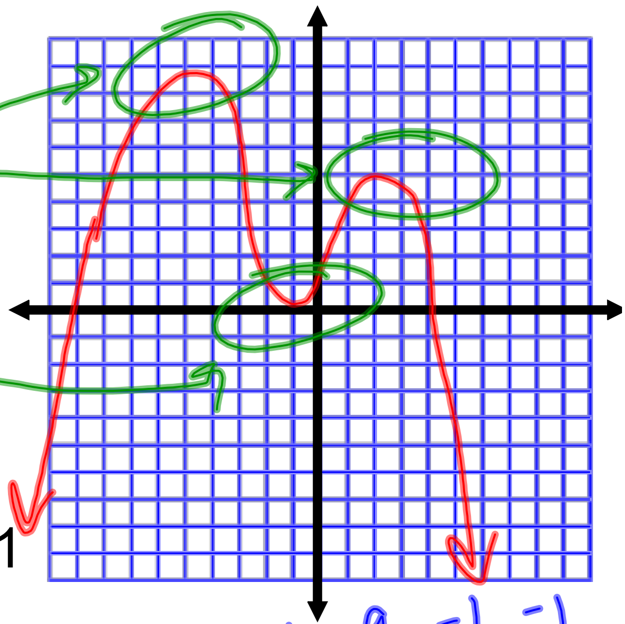
Local Maximum-
max in area
peaks

Local Minimum-
min in area
valleys

Turning Points:

degree n has at most n-1

$x^4 \to 3$ turning pts



zeros: 4, -9, -1, -1

$(x-4)(x+9)(x+1)^2$

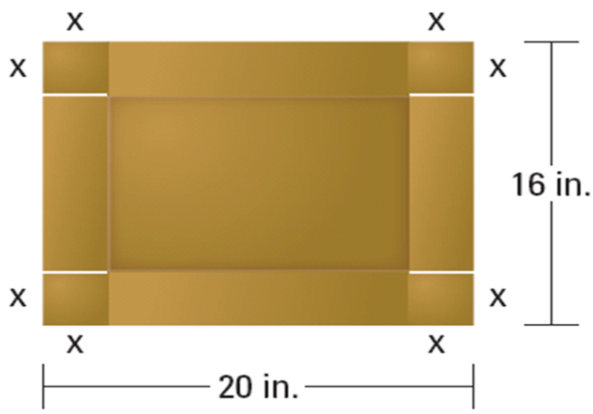
Graph and find x-intercepts, local Max/Min

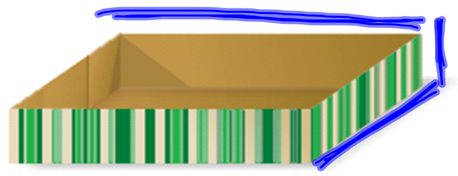
$$f(x) = x^3 - 3x^2 + 6$$

on calculator
→ graph in y=
→ 2nd trace, zeros
→ 2nd trace, Max/min

$$y = x^4 - 6x^3 + 3x^2 + 10x - 3$$

You want the box to have the greatest volume. How long should the cuts be? What is the Max volume? What will the dimensions be?





V = L x W x h

V = (20 - 2x)(16 - 2x)(x)

14 x 10 x 3

Homework: Ch 5.8 pg.390 #'s 4,6,16-24e,30,34