Lesson # 14 Section 4.3

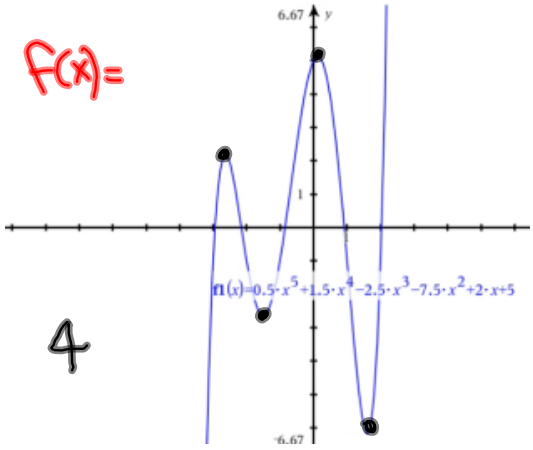
Aim: How Do we identify complete graphs of polynomial functions?

Do Now: Find how many local maximums or minimums are there for each graph?

$f(x) = 0.5x^5 + 1.5x^4 - 2.5x^3 - 7.5x^2 + 2x + 5$

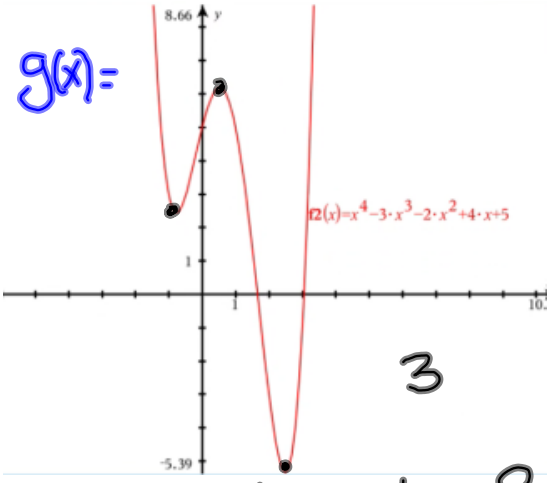
$g(x) = x^4 - 3x^3 - 2x^2 + 4x + 5$

f(x)=



4

g(x)=



3

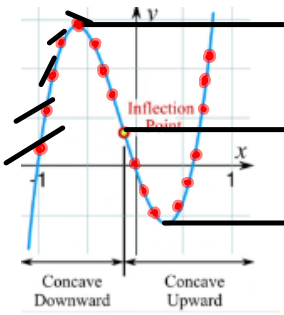
How can you predict the number of Local MAX./min? Extrema

Degree − 1

± - Points of Inflection

1. MATHEMATICS

a point of a curve at which a change in the direction of curvature occurs.



Local MAX

point of inflection

Local MIN.

Degree = 3

2. Does the Degree of the polynomial function connected to the # of inflection points? (n-2)

If Degree = 2 ∪ no inflection point

a) $n \geq 2$ has at most n-2 points of inflection

b) $n > 2$ and n is ODD has at least one point.

Little break from lesson

HW#10

Pg. 203
7

Ke (4)
According my records the correct answer (3)

In Exercises 7–12, determine whether the orbit of the point under the function $f(x) = 4x(1 - x)$ converges or approaches infinity or neither.

7. $x = -1$

8. $x = -0.5$

Apr 11-12:51 PM

Now Back to the lesson

1) Graph $f(x) = x^4 + 11x^3 + 25x^2 - 50x - 70$

2) Graph $g(x) = 0.02x^5 + x^4 - x^3 - 5x^2 + 4x + 2$

Find

a) a viewing window (approx.)

b) local extrema

c) x-intercepts

d) inflection points

e) How do you know if there are no more x-int. ?

f) Does the end behavior of this graph similar to the graph of $y = x^9$ Question 1

or graph of $y = x^5$ Question 2

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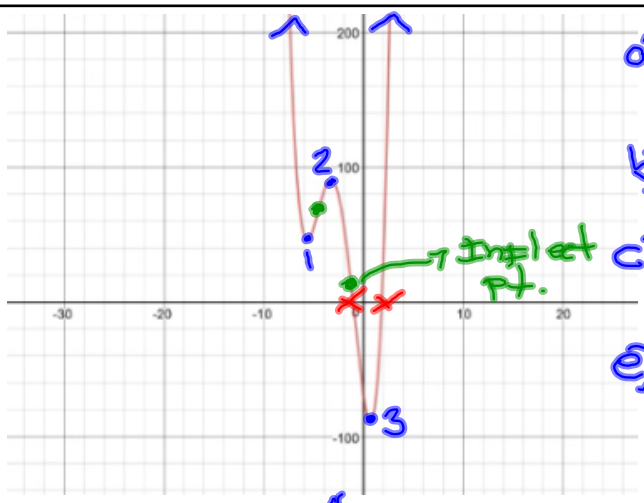


a) window $-30 \le x \le 30$
$-100 \le y \le 200$

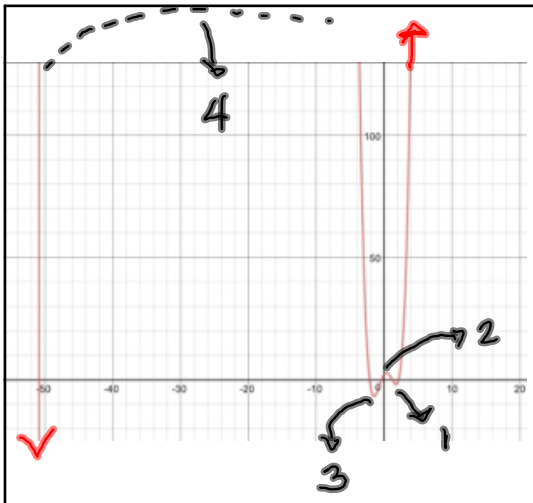
b) (3) Degree = 4 (n-1)

c) x-intercepts
(-1.07, 0) (1.83, 0)

e) How do you know there are no more x-int?
Degree = 4 (Endbehavior)
No x-intercepts

f) Look $y = x^4$
Yes
END behavior

d) Inflection point (-1.28, 2.42)
(-4.47, 70.2)



$y = 0.0x^5 + x^4 - x^3 - 5x^2 + 4x + 2$

a) window $-70 \le x \le 10$
$-20 \le y \le 200$

b) Local Extrema $(n-1) = 4$

End behavior

$y = x^5 \Longrightarrow$ up, down

c) x intercepts (5)

d) Inflection Points $(n-2) = 3$

e) No more x-int. (MAX 5)

f) $y = x^5$ (similar)