Review:

Find ALL Real Zeros (Calculator).

1) $f(x)= 10x^4-11x^3-42x^2+7x+12$

2) If $y=10-(x+1)^2$, for what real value of x will y have its maximum value?

A. -2
B. -1
C. 0
D. 1
E. 2

Oct 5-3:34 PM

Practice-Blue Sheets

Rally Coach #4

Oct 10-8:45 AM

Homework Questions

4) 1, 2, 5, 10
6) 1, 2, 3, 6, 9, 18, 1/2, 3/2, 9/2
12) -4, 2, 7
26) 1, 3, -5/2
34) -2, -1, 1, 2, 3
46) l=40, w=10, d=5

Oct 18-12:49 PM

CH 5 Day 5
Polynomial Functions
(5.2/5.8) End Behavior
and
Graphing Polynomials

Oct 12-12:30 PM

Multiple Choice Questions

Oct 18-2:05 PM

I. Polynomial Functions

each exponent is a whole number.

ax^n

->real numbers only

-> no negatives
-> no decimals
-> no fractions
-> no square root

1.) $f(x) = 2x^2-x^{-2}$
2.) $f(x) = -x^4-.8x^3+5$
3.) $f(x) = x^3-x^{1/2}+3$
4.) $f(x) = (1/3)x^2-2x+\sqrt{5}$

Oct 12-10:45 AM

Characteristics of Polynomials:

Degree: highest exponent

Standard Form: descending order of exponents

Leading Coefficient: number is front of the term which the highest exponent.

Constant Term: Last term in standard form, does not contain a variable.

Oct 5-3:38 PM

Classify:

-Number of Terms

1 Term- Monomial

2 Terms- Binomial

3 Terms-

4+ Terms-

-Degree

x linear

x^2 Quadratic

x^3 Cubic

x^4 Quartic

Oct 12-11:51 AM

Reciporcal Reading

Oct 10-8:47 AM

Polynomial Graphing

-Roots: Zeros (# of times the graph crosses the x-axis)

-Turns: # of times the graph changes directions

-End Behavior: if the graph goes up or down on each side

Oct 5-3:41 PM

-Degree 2 (Quadratic-last unit)

# of roots: 2

# of turns: 1

end behavior, same direction

+Leading Coef. : left up and right up

- Leading Coef. : left down and right down

Oct 12-11:52 AM

II. Graphing Properties

Degree: 3 (cubic)

1.) $y = 3x^3 - 9x + 1$

2.) $y = 4x^3 + 1$

3.) $y = -(1/2)x^3 + 2x - 1$

4.) $y = -3x^3 - x + 3$

roots: 3

turns: 2

end behavior:

Oct 4-2:34 PM

II. Graphing Properties

Degree: 4 (Quartic)

1.) $y = 3x^4 + 4x^3$

2.) $y = x^4 - 5x^2 + 4$

3.) $y = -x^4 + 2$

4.) $y = -2x^4 + 3x^3 - x + 2$

roots: 4

turns: 3

end behavior:

both up or
both down

Oct 4-2:44 PM

II. Graphing Properties

Degree: 5 (5th Degree)

1.) $y = x^5 - 5x^3 + 4x$

2.) $y = 2x^5 - 2x + 1$

3.) $y = -4x^5 + x^4 - 2x^3 - 1$

roots: 5

turns: 4

end behavior:

low to high

high to low

Oct 4-2:46 PM

II. Graphing Properties

Degree: 6 (6th Degree)

1.) $y = x^6 + 3x^5 - 11x^4 - 27x^3 + 10x^2 + 24x$

2.) $y = -x^6 + 3x^5 - 2$

3.) $y = -5x^6 - 3x^4 + 8$

roots:

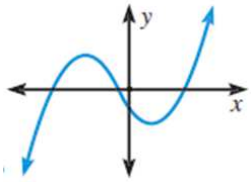
turns:

end behavior:

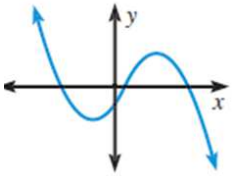
Oct 4-2:47 PM

II. End Behavior of Polynomial Functions

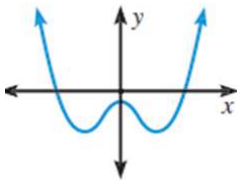
Degree: odd
Leading coefficient: positive



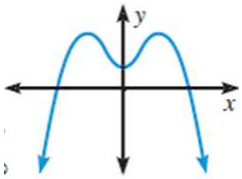
Degree: odd
Leading coefficient: negative



Degree: even
Leading coefficient: positive



Degree: even
Leading coefficient: negative



Oct 14-1:16 PM

Homework- Day 5 (page 341)

Purple ws-due quiz day

Oct 24-8:32 AM

II. Graphing Properties

Conclusions

1) Polynomials: continuous (no breaks) with all smooth turns

2) Max # Turns=degree-1

3) # Roots: max #=degree or even difference (the other roots are imaginary)

4) End behavior

odd degree: opposite directions

even degree: same directions

Oct 19-9:28 AM

Examples

7.) $f(x)= x^3+5x^2-9x-45$

1.) What is the degree? How many roots?

2.) Find the real roots by factoring.

3.) Sketch a graph.

Oct 18-12:27 PM

Quiz-Factoring, Synthetic Division, Long Division

*After quiz, please complete the writing prompt.

Oct 1-8:18 AM

Graphing Higher Order Polynomials in **Intercept Form**.

1) Plot intercepts as points

2) Plot a couple of other points in between intercepts to get general shape

3) Use general shape

4) Remember end behavior (consider extreme f(-100), f(100))

Ex: f(x)=1/3(x-5)(x+2)(x-3)

Oct 19-9:34 PM

Examples

3.) To Graph: $f(x) = (x-2)^2(x+2)$

1.) Roots

2.) Points between the roots

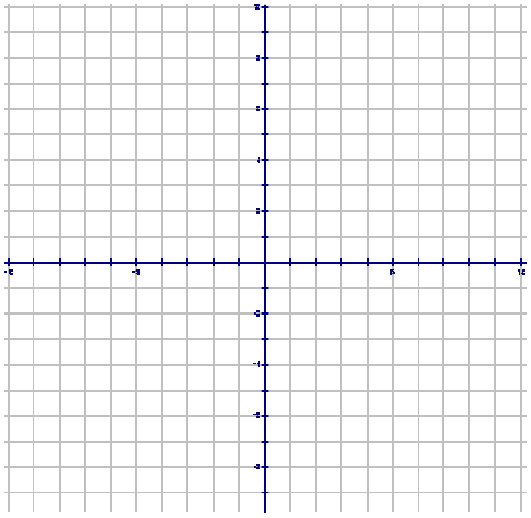
3.) End Behavior

Oct 12-12:19 PM

Examples

3.) To Graph: $f(x) = (x-2)^2(x+2)$

4.) The graph



Oct 12-12:21 PM

Examples

4.) To graph: $f(x) = -2(x-3)(x-6)^2$

1.) Roots

2.) Points between the roots

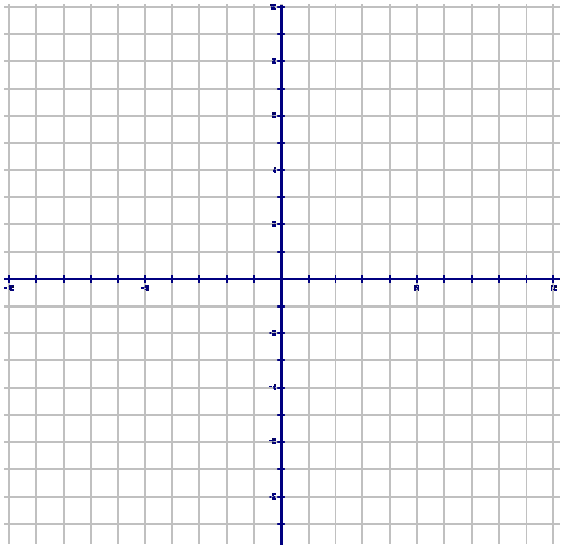
3.) End Behavior

Oct 12-12:23 PM

Examples

4.) To graph: $f(x) = -2(x-3)(x-6)^2$

4.) The graph



Oct 12-12:23 PM

Examples

5.) To graph: $f(x) = 6x^2(x+4)^2$

1.) Roots

2.) Points between the roots

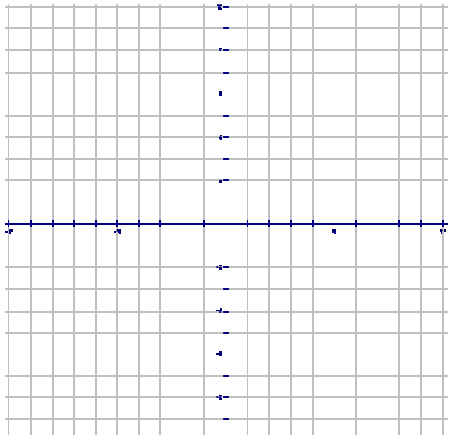
3.) End Behavior:

Oct 12-12:25 PM

Examples

5.) To graph: $f(x) = 6x^2(x+4)^2$

4.) The graph



Oct 12-12:26 PM

Examples

6.) To graph: $f(x) = -13x(x-2)^2(x+3)$

1.) Roots

2.) Points between the roots

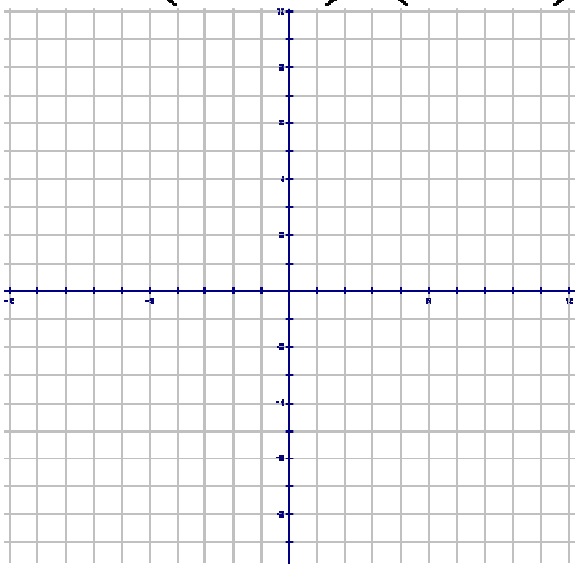
3.) The end behavior

Oct 12-12:27 PM

Examples

6.) To graph: $f(x) = -13x(x-2)^2(x+3)$

4.) The graph



Oct 12-12:27 PM

Examples

1.) $f(x) = x^2 + 3$

Describe the following.....

Degree:

Leading Coefficient:

y-int:

turning points:

# of roots:

End Behavior:

Sketch a graph.

Oct 6-9:23 AM

Graphing Higher Order Polynomials in **Standard Form**.

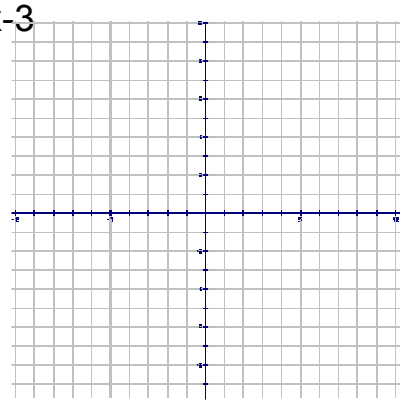
1) If you can't factor

Plot points (-2, -1, 0, 1, 2)

2) Use general shape

3) Remember end behavior (consider extreme f(-100), f(100))

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



Oct 19-9:28 PM

Examples

2.) $f(x) = x^3 - 1$

Describe the following.....

Degree: 3

Leading Coefficient: 1

y-int: -1

turning points: 2

# of roots: 3 x=1

End Behavior: low to high

Sketch a graph.

Oct 6-9:30 AM

Complete together pg 390# 16/19 (determine degree)

Pg 391#22 (state properties)

Oct 26-7:12 AM

And the homework is:
Unit Plan Day 5/6

*After quiz, turn in purple ws and work on Day 5 and 6 homework.

Oct 12-12:28 PM