

Pre-Calc and Col. Math Lesson Plans Week #20 and #21

Teacher: Ngoma Botumile A

Subject: PC and CP

Week of: 1/16-1/27/2017

Grade: 11 & 12

Day/Date: Monday/Tuesday 1/16/2017 and 1/23/2017

Unit 10: Polynomial Functions in the Real World

Students analyze real-world situations involving polynomial functions using graphs, tables, and algebraic properties.

Today's Objective: Students will analyze polynomial functions using chapter 3 of Pre-calc text book.

D. E. A. R: First 10 min of class.

- 1) As required school wide, points will be lost for lack of participation. See your D.E.A.R. download for this week.
- 2) No points for tardy students during D.E.A.R.

Warm-up: From warm-up table download

Agenda:

1. D.E.A.R.
2. Warm up solution
3. Check downloads week 21
4. Polynomials analysis.

Homework: POW#21, and HOW #21. **Do not forget weekend study.**

Evaluation/Exit Ticket: Start Summary of what you have learned today at level "0" CHAMP. (Must include Vocab and Essential understanding/Guiding Questions from lesson plan for each day)

TEKS:

See TEKS List below

ELPS: : C.3D, C.3H, C.3E, C.5G, C.1E, & C.2H
(ELPS detail descriptions are posted in Class)

Vocabulary:

- 1) Zeros
- 2) Multiplicity,
- 3) Turning point

Essential Understanding/Guiding Questions:

- 1) How does the degrees of a polynomial relate to the number of turning points.

Day/Date: Wednesday/Thursday 1/18/2017 and 1/25/2017

Unit 10: Polynomial Functions in the Real World

Students analyze real-world situations involving polynomial functions using graphs, tables, and algebraic properties.

Unit 11: Attributes of Rational Functions

Students analyze transformations and characteristics of rational functions through graphs, tables, and algebraic methods.

Unit 12: Rational Functions, and Inverse and Joint Variation

Students analyze rational functions through graphs, tables, and algebraic methods and connect rational functions, inverse and joint variations to real-world situations.

Today's Objective: Students will analyze polynomial functions using chapter 3 of Pre-calc text book.

D. E. A. R: First 10 min of class.

- 1) As required school wide, points will be lost for lack of participation. See your D.E.A.R. download for this week.
- 2) No points for tardy students during D.E.A.R.

Warm-up: From warm-up table download

Agenda:

1. D.E.A.R.
2. Warm up solution
3. Check downloads week 21
4. Polynomials analysis.

Homework: POW#21, and HOW #21,. **Do not forget weekend study.**

Evaluation/Exit Ticket: Start Summary of what you have learned today at level "0" CHAMP. (Must include Vocab and Essential understanding/Guiding Questions from lesson plan for each day)

TEKS:

See TEKS List below

ELPS: : C.3D, C.3H, C.3E, C.5G, C.1E, & C.2H
(ELPS detail descriptions are posted in Class)

Vocabulary:

- 1) End behavior
- 2) Limit
- 3) Asymptotes
- 4) Unbounded

Essential Understanding/Guiding Questions:

- 2) What is Joint variation? Pp206

Today's Objective: Students will work in pairs to solve math problems involved in math competitions such as UH math, Rice math contest, ACM, etc

D. E. A. R: First 10 min of class.

- 1) As required school wide, points will be lost for lack of participation. See your D.E.A.R. download for this week.
- 2) No points for tardy students during D.E.A.R.

Warm-up: From warm-up table download

Agenda:

1. D.E.A.R. (Start your Problem solving: UH math 2015)
2. Start Problem solving, work must be detailed.
3. Class grade is based on your focus and quiz grade is based on your work.
4. All work must be done in the notebook, do not copy the problem but copy the graph if necessary, but specify your question, Test, and partner name.
5. Turn in your work in your dropbox folder before leaving the class.
6. If you are absent you still have to complete this work and turn in by 10:00 pm Friday.

Homework: POW#21, and HOW #21,. **Do not forget weekend study.**

Evaluation/Exit Ticket: Start Summary of what you have learned today at level "0" CHAMP. (Must include Vocab and Essential understanding/Guiding Questions from lesson plan for each day)

TEKS:

Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

PC.1A Apply mathematics to problem arising in everyday life, society, and the workplace.

PC.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.

PC.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.

ELPS: : C.3D, C.3H, C.3E, C.5G, C.1E, & C.2H (ELPS detail descriptions are posted in Class)

Vocabulary:

- 1) Based on contest question , list two

Essential Understanding/Guiding Questions:

- 1) Write a note on your experience based on the question you solved today.

Math Contest: AMC

<http://www.maa.org/math-competitions/amc-1012>

UH Math Contests:

<http://mathcontest.uh.edu/>

Rice Univ. Math contest:

<http://www.ruf.rice.edu/~eulers/RMT.html>

Cycle 4 Pre-calc Units

Unit 10: Polynomial Functions in the Real World

Students analyze real-world situations involving polynomial functions using graphs, tables, and algebraic properties.

Unit 11:

Attributes of Rational Functions

Students analyze transformations and characteristics of rational functions through graphs, tables, and algebraic methods.

Unit 12:

Rational Functions, and Inverse and Joint Variation

Students analyze rational functions through graphs, tables, and algebraic methods and connect rational functions, inverse and joint variations to real-world situations.

Cycle 4 Pre-Calc TEKS

Functions. The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:

□ **PC.2N Analyze situations modeled by functions**, including exponential, logarithmic, rational, **polynomial**, and power functions, **to solve real-world problems.**

Algebraic Reasoning. The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:

□ **PC.5J** Solve polynomial equations with real coefficients by applying a variety of techniques in mathematical and real-world problems.

□ **PC.5K** Solve polynomial inequalities with real coefficients by applying a variety of techniques and write the solution set of the polynomial inequality in interval notation in mathematical and real-world problems

PC.2I Determine and analyze the key features of exponential, logarithmic, **rational**, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions **such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing.**

□ **PC.2J Analyze and describe end behavior of functions**, including exponential, logarithmic, **rational**, polynomial, and power functions, **using infinity notation to communicate this characteristic in mathematical and real-world problems.**

□ **PC.2K** Analyze characteristics of rational functions and the behavior of the function around the asymptotes, including horizontal, vertical, and oblique asymptotes.

□ **PC.2L** Determine various types of discontinuities in the interval $(-\infty, \infty)$ as they relate to functions and explore the limitations of the graphing calculator as it relates to the behavior of the function around discontinuities.

□ **PC.2M** Describe the left-sided behavior and the right-sided behavior of the graph of a function around discontinuities.

PC.2I Determine and analyze the key features of exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions **such as domain, range, symmetry, relative maximum, relative minimum, zeros, asymptotes, and intervals over which the function is increasing or decreasing.**

Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

PC.1A Apply mathematics to problem arising in everyday life, society, and the workplace.

PC.1B Use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.

PC.1D Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.