

Pre-Calc and Col. Math Lesson Plans Week #23

Teacher: Ngoma Botumile A

Subject: PC and CP

Week of: 2/6-2/10/2017

Grade: 11 & 12

Day/Date: Monday/Tuesday 2/6/2017

Unit 20:

Polar Coordinates, Equations, and Graphs

Students explore the properties and relationships of the polar coordinate system and the Cartesian coordinate system. They represent complex numbers in polar form and use polar coordinates to graph and apply functions in real-world situations.

Today's Objective: Students will watch videos or use text book chapter 8 to independently develop an understanding of Polar coordinates and vectors by recording in their notebooks.

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 23
4. Start independent Study Video on Polar Coordinates. Or use text book chapter 8.
5. See Chapter 8: pp571 to pp 650.

Homework: POW#23, and HOW #23. **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) Pole
- 2) Polar axis
- 3) Polar coordinates (r, θ)
- 4) Rectangular coordinates (x, y)

Essential Understanding/Guiding Questions:

- 1) How does polar coordinates connect with rectangular coordinates? See Pp575
- 2)

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Warm-up: From warm-up table download

Agenda:

1. D.E.A.R.
2. Warm up solution
3. Thursday Class B4 Presentation from Rice professor.
4. Check downloads week 23
5. Start independent Study Video on Polar Coordinates. Or use text book chapter 8.
6. See Chapter 8: pp571 to pp 650.

Homework: POW#23, and HOW #23. **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) Graphing Polar Equations
- 2) Cardioid pp588
- 3) Limacon with/without inner loop pp589&590
- 4) Rose pp592
- 5) Logarithmic Spiral pp594

Essential Understanding/Guiding Questions:

How classify Polar equations? Pp 594 to 595

Today's Objective: Students will work in pairs or alone to solve math problems involved in math competitions such as UH math, Rice math contest, ACM, etc (Problem Solving development)

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

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- 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 **Friday Quiz**)
2. Teacher will assign problems to be solved. See the download site by Friday morning.
3. Start Problem solving, your work must be detailed.
4. Class grade is based on your focus and quiz grade is based on your work.
5. All work must be done in the notebook, do not copy the problem but copy the graph if necessary also specify the question you are solving and partner's name if applicable.
6. Turn in your work in your dropbox folder before leaving the class.
7. **If you are absent from class, you must still complete this Friday Quiz and turn it in by 8:00 pm Today.**

Homework: POW#23, and HOW #23. **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>

Chapter 8: Polar coordinates and Vectors (Weeks 23 to 25)

Unit 20:

Polar Coordinates, Equations, and Graphs

Students explore the properties and relationships of the polar coordinate system and the Cartesian coordinate system. They represent complex numbers in polar form and use polar coordinates to graph and apply functions in real-world situations.

Unit 21:

Vectors

Students explore two- and three-dimensional applications of vectors through dot products and cross products.

TEKS

• **PC.3D** Graph points in the polar coordinate system and convert between rectangular coordinates and polar coordinates.

PC.3E Graph polar equations by plotting points and using technology.

PC.4I Use vectors to model situations defined by magnitude and direction.

PC.4J Represent the addition of vectors and the multiplication of a vector by a scalar geometrically and symbolically.

PC.4K Apply vector addition and multiplication of a vector by a scalar in mathematical and real-world problems.

Mathematics Process Standards

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.1C Select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.

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