Pre-Calculus 12 (Fall 2024)

Room 112
Period 4, 2:15 pm to 3:45 pm (Wednesdays 1:30 pm to 2:45 pm)

Teacher: Ms. Austrom
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Course Description:

Pre-Calculus 12 is a mathematics course intended for students who may enrol in post-secondary programs that require its completion, such as commerce, engineering, economics, or science related programs. Students who take Pre-Calculus 12 are expected to have a strong foundation of maths skills from Pre-Calculus 11. Throughout the course students will compare various representations of mathematical functions, solve multi-step equations using inverses, and analyse transformations of functions. Students will be required to demonstrate mathematical thinking both verbally and in writing.

Course Overview:

Big Ideas

Using inverses is the foundation of solving equations and can be extended to relationships between functions.	Understanding the characteristics of families of functions allows us to model and understand relationships and to build connections between classes of functions.	Transformations of shapes extend to functions and relations in all of their representations.

Course Outline

Unit	Chapter	Content
1	Chapter 1: Transformations	Analyse how an existing graph, or graphed equation, is modified to produce a variation of the proceeding graph.
	Chapter 2: Radical Functions	Analyse radical graphs and transformations of them, discuss square roots of functions, solve radical equations graphically.
	Chapter 3: Polynomials	Graph higher-degree equations and analyse their graphs. Use methods such as factoring or graphing to solve equations.
2	Chapter 4: Trigonometry and the Unit Circle	Explore angles and angle measure (in radians and degrees) and the unit circle. Analyse and use trigonometric ratios to solve equations.
	Chapter 5: Trigonometric Functions and Graphs	Graph trigonometric functions by hand, analyse transformations of sinusoidal functions, translate between equations and graphs of trigonometric functions.
	Chapter 6: Trigonometric Identities	Use identities and inverse operations to solve trigonometric equations. Solve problems in a situational context (ocean patterns, construction, physics).
3	Chapter 7: Exponential Functions	Use laws of exponents to solve equations. Graph and analyse exponential functions. Solve problems in a situational context (bacterial growth, compound interest, radioactive decay).
	Chapter 8: Logarithmic Functions	Use laws of logarithms to solve equations. Graph and analyse logarithmic functions. Solve problems in a situational context (decibel measures, pH levels, earthquakes).

4	Chapter 9: Rational Functions	Examine characteristics of rational graphs, including asymptotes, intercepts, point discontinuities, domain, and end-behaviour.
	Chapter 10: Function Operations (optional)	Explore sums, differences, products, and quotients of functions. Create and analyse composite functions.
	Chapter 11: Sequences and Series	Review arithmetic sequences and series, discuss geometric sequences and series and their connection to exponential models.

Assessment Guidelines:

Assignments	10%	25% of your grade comes from participation, taking notes, completing in-class practice, and homework.
Quizzes	25%	75% of your grade comes from various assessments throughout the course. Quizzes and projects will be given throughout a unit. There will be a unit exam at the end of each unit.
Unit Tests and Projects	45%	
Final Exam	20%	

Classroom Expectations:

Our Norms:

1. We respect our minds - participate and engage with the material, use respectful language, ask questions when you need to, allow everyone to contribute ideas, come to class ready to learn

2. We respect our space - practice classroom safety, treat all classroom materials carefully, clean up after yourself

3. We respect our time - be on time to class, make the most of your time in class by getting clarification when it is needed, only one person talks at a time

If you are absent from class, please check the Class folder on Teams for any notes or handouts you missed. Schedule a time with Ms. Walker as soon as possible if you missed a quiz or exam.

Show your own work:

Work must be shown or mathematical thinking must be explained at all times. If you do not show work, you will not receive full credit on an assignment, quiz, or test. Your work must be your own, plagiarism from other students or internet sources will **not** be tolerated and will result in a **zero** for that particular assignment.

Required Course Materials:

- Pencil, eraser, ruler
- Graphing calculator (for example, a TI-83 or TI-84 calculator)
- Binder *(suggested)*