**2024-2025 Pre-Calculus/Trigonometry**

**Period 6 (1:16 – 2:09 PM)**

**ROOM #37**

**Mrs. Traci Bernardy, Instructor**

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**Book:** *PreCalculus, (Ninth Edition)* Ron Larson, ©2014

Brooks/Cole, Cengage Learning

**Internet Resources at**: *LarsonPrecalculus.com* & *CalcChat.com*

**Prep:** Period 1 (8:05 – 8:58 AM) **Home #:** 507/747-2545

**Study Hall:** Period 7 (2:12 – 3:05 PM) **School #:** 507/342-5114 ext 143

This course will prepare you for the study of calculus as well as other college courses – including sciences and social sciences. It will review the polynomial and algebraic functions with careful attention to their properties and graphing. Trigonometric functions will be taught based on the unit circle - you will graph trigonometric equations, prove trigonometric identities, and learn the basic trigonometric functions of right and obtuse triangles. You will be expected to apply these concepts to the solution of related problems.

There may be a time when you have trouble with a unit or assignment. Please feel free to use all your resources to get help with these items. Ask a parent, classmate and me if you are having troubles. I am available during my prep time, before school at 7:45 AM (or earlier by appointment), and after school until 3:30 PM – but usually later. If you cannot make it during any of these times, let me know and we’ll try to find a time that works.

We will implement the graphing calculator a small amount into this class; however, you are not required to have one. All problems assigned will be able to be completed without the use of a graphing calculator. Sharing of calculators on tests will NOT be permitted.

Most sections of the text will be presented with part of the day of lecture followed by the remaining time devoted to classroom work. Some lessons will involve student group discovery activities in place or in addition to a lecture. A variety of technology will be used to help students better understand the topics being discussed. Topics will be presented by using the “rule of four”: graphical, numerical, algebraic, and verbal. A computer projector will be used for viewing and using Internet sites, and for demonstration applets. Students will be encouraged to ask clarification questions as the lesson progresses. A collaborative working environment in the classroom will be established for students to collaborate on concepts and for large group discussions.

Satisfactory completion of each semester of this course counts as 0.5 credits each toward graduation math requirements. No credit will be given for a student who is continually absent from the class as per the Wabasso HS attendance policy. The following is a tentative outline of the subjects we will cover during this course. We may add or remove items as we progress through the school year.

**Course Outline & Learner Objectives:**

The following outcomes are expected to be met by each student who completes this course.

*Semester 1 – Relations, Functions, and Graphs*

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Objective** | **Assessment** | **Time**  **(in days)** |
|  | * Students will be have a working knowledge of a graphing calculator and be able to apply it to finding solutions to problems. |  |  |
| *Chapter 1 -*  *Functions & Their Graphs* | * Students will be able to (SWBAT) find distance, slope & midpoints and apply them in analytical proof & applications. * SWBAT write & graph equations of lines. * SWBAT define & calculate relations & functions, along with their composites & inverses. * SWBAT graph relations and functions using families of graphs, inverses, symmetry and transformations. * SWBAT develop & use mathematical models from data with direct, inverse, combined or joint variation. | Chapter Test | 15 |
| *Chapter 2 – Polynomial & Rational Functions* | * SWBAT recognize and graph polynomial equations, inequalities, and rational equations, including the use of the Intermediate Value Th’m. * SWBAT solve polynomial equations, inequalities, and rational equations. Students will use the Quadratic formula, completing the square, the Remainder theorem, Factor theorem, Rational Root Theorem, and the Location principle as methods for finding solutions * SWBAT identify (algebraically & graphically), simplify & perform operations with complex numbers in rectangular form. * SWBAT identify asymptotes, intercepts, critical points and end behavior of graphs algebraically. | \*Mid-Chap. Test  \*End of Chap. Test | 17 |
|  | ***END OF QUARTER 1*** | Tentative Final | Oct 31 |
| *Chapter 3 - Exponential and Logarithmic Functions* | * SWBAT graph exponential & logarithmic equations * Students will know and be able to use the properties of Logarithms, including natural logs, and exponents, including the number *e,* to solve equations and problems. | Chapter Test | 19 |
| *Chapter 7 – Systems of Equations & Inequalities* | * SWBAT solve linear and nonlinear systems of equations and inequalities graphically & algebraically. * SWBAT use linear programming to solve problems. | \*Mid-Chap. Test  \*End of Chapter Test | 17 |
| *Chapter 9 – Sequences, Series & Probability* | * SWBAT recognize arithmetic & geometric sequences & series and notation used with them. * SWBAT locate the *n*th term of a sequence. * SWBAT find the sum of *n* terms of a series and of an infinite series. * SWBAT use summation, factorial &limit notation. | Section Test | 10 |
|  | ***END OF SEMESTER 1 (Tentative)*** | Cum. Final | Jan 10 |

*Semester 2 - Trigonometry*

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Objective** | **Assessment** | **Time**  **(in days)** |
| *Chapter 4 - Trigonometric Functions* | * SWBAT find the measure of angles which are coterminal and their reference angles in radian or degree measures. * SWBAT find arc length, linear & angular velocities and the area of a sector. * SWBAT find the exact values for the six trigonometric functions of special angles and approximate value for any angle. * SWBAT solve right triangles using trig ratios. * SWBAT graph and use graphs of the trigonometric functions and their inverses. * SWBAT find the amplitude, period, phase shift, for trigonometric functions and write the function given that information. * SWBAT evaluate inverse trig functions and find principal values of the functions. * SWBAT solve problems involving simple harmonic motion. | \*Mid-Chapter Test(s)  \*End of Chapter Test | 40 |
|  | ***END OF QUARTER 3 (Tentative)*** | Cum. Final | Mar 18 |
| *Chapter 5 – Analytic Trigonometry* | * SWBAT identify reciprocal, quotient, Pythagorean, symmetry identities & use them to verify other identities and find numerical values of trig functions. * SWBAT use the sum & difference, double & half-angle identities for sine, cosine, and tangent functions. * SWBAT solve trigonometric equations. | Chapter Test | 20 |
| *Chapter 6 – Additional Topics in Trig* | * SWBAT solve non-right triangles using the law of sines & law of cosines. * SWBAT find the area of triangles. | Chapter Test | 7 |
|  | *Additional Topics as time permits will be decided based on interest of the students could include:*   * *Matrix Algebra* * *Vectors* * *Conic Sections* |  |  |
|  | ***END OF SEMESTER 2 (Tentative Date)*** | Cum. Final | May  19-21 |

**CLASS PROCEDURES**

**All Scenarios:**

* Question of the Week will be posted and collected via a Schoology.
* A weekly Lesson Plan will be posted on Schoology.
* Daily Assignments will be posted as a Discussion on Schoology.
* SMART Board work/presentations will be posted as a .pdf in Schoology.
* The textbook and any supplemental materials will be available on Schoology.
  + The text is in a folder identified as such and sorted by chapter.
  + Supplemental materials (worksheets, notes, videos, links to quizzes/exams etc.) will be located in Schoology and sorted into the folder for the current chapter.
* Watch both Schoology & your SCHOOL email for communication from me.

**Hybrid Learning – Scenario 2**

* If you are not present, you will be expected to connect via Zoom during your class period for instruction and question/answer sessions.
* Zoom sessions will be recorded and posted in Schoology for review later as needed.
* Assignments given will be treated the same as if everyone was present.
* Tests that are scheduled will, for the most part, still be given in class to those students present as scheduled and to the other group on the next day present.
* Sometimes, an exam may be switched to a Schoology online exam, you may be asked to make a presentation via flip-grid or some combination.
* For any online exam, a picture of your work must be submitted with your exam to receive credit.
* Quizzes may utilize Schoology or the app Quizizz, or continue to be given via paper on present day.

**Distance Learning – Scenario 3**

* You will be expected to connect via Zoom during your class periods assigned hour for instruction and question/answer sessions.
* Zoom sessions will be recorded and posted in Schoology for review later as needed.
* Assignments given will be treated the same as if everyone was present.
* Tests that are scheduled will be adjusted to an online exam; the format may change depending on the section we are covering at the time.
* You may be asked to present via flip-grid, do a Schoology exam, or some combination.
* For any online exam, a picture of your work must be submitted with your exam to receive credit.
* Quizzes may utilize Schoology or the app Quizizz.

**E-Learning Days**

* The E-Learning Assignment will be posted on Schoology by 9 AM and is due the next day in class unless otherwise noted on the assignment post. Assignments ARE COLLECTED as proof of attendance as per the school policy.
* Watch your SCHOOL EMAIL and SCHOOLOGY for communications from me.
* I will be available for questions during the normal school day hours. I can be contacted by email or my home phone. Zoom sessions can be arranged as necessary.

Your grade will be determined by 5 major factors:

***Chapter Test scores****.* You may retake any test throughout the grading period, within 2 weeks of the original test date. If you would like to take advantage of this option, you need to contact me to set up a time outside of class to do so. If your score improves, your recorded score will be the average of the retake and original tests. If your score does not improve, you will receive your original score. Your grade cannot go down by retaking a test.

**Grading**

100 - 95% A

94 – 90% A-

89 – 87% B+

86 – 84% B

83 – 80% B-

79 – 77% C+

76 – 74% C

73 – 70% C-

69 – 67% D+

66 – 64% D

63 – 60% D-

59 & below F

***Homework*.** Homework may be collected. Assignments will be awarded points based on completion – including work shown – on a pre-set scale from 5 to 0 points being awarded. Students are responsible for organizing and keeping their materials to be able to locate it when they are requested.

Graded assignments (which are graded for accuracy and completion) may be assigned. The student will be notified when the assignment is given that this will be “graded.”

Any late homework, graded or other, will be penalized 10% per day. They will no longer be accepted after 5 days. Late homework is any paper that is not handed in when requested – even if it is handed in later that class period.

***Quizzes****.* Short assessments on 1 or 2 covered sections. Most can be retaken the same as a test.

***Final Test****.* This is a tentative exam which will may be given at the conclusion of each quarter. Total points will be used to calculate the score. It will be approximately 10% of the quarter grade. A cumulative final will be given at the end of the course to cover the entire year.

***Effort****.* Your effort in class activities and attitude will affect your final grade. Points for effort will be awarded at mid-term and at the end of the quarter.

***Extra Credit*** will be available from the “Question of the Week” when posted. Each correct answer turned in with work shown, name, course name, period, and date will receive 2 points extra credit. These will be posted and turned in via Schoology. The answer must be turned in by 8:00 am the next Monday.

Classroom Expectations: All class members are to meet these expectations, working to the best of their ability to make this a great learning experience.

1. Be an Active Listener.

Do not socialize or cause a disruption while the teacher is instructing.

1. Do your BEST work.
2. Be ready to start class when the bell rings.

Be quiet. Be physically & mentally ready for class to begin. Bring necessary materials and completed homework assignments.

1. Respect everyone & everything in the room.

Definition: NO groaning (etc) when assigned a partner you may not like. Keep hands, feet etc to yourself, cleaning up after yourself and others, no graffiti or defacing property, no use of offensive language or symbols.

1. NO POP OR FOOD! Water only will be allowed.
2. No Backpacks are allowed in the classroom.
3. Electronic Devices are not allowed to be used in the classroom unless you request & are given permission to use them for a specific school work activity each time you want to use them. Devices must be turned off & put away while in the classroom.
4. Phones may not be used and should be placed in the pouches upon entering the classroom. Smart Watches are not to be used and may not be worn during testing.

Consequences when our Classroom Expectations are not met:

* **First offense - Verbal Warning**: A discussion with the student, after class or otherwise individually, to be reminded of the classroom expectations. The parent will be emailed.
* **Second offense**: The student will receive a second verbal warning and a phone call will be made to their parent/guardian about the offense.
* **Third offense:** The student will be asked to remain after class where he/she will be issued an after-school detention with Mrs. Bernardy and reminded of the classroom expectations and discuss solutions to the issues. Either an email or phone call will be made to their parent/guardian about the offense.
* **Fourth offense**: The student will be referred to administration. A parent(guardian)/student/ teacher/counselor/administration meeting will be held to develop a behavior plan to address the offense.
* **Subsequent Violations**: Students who continue to exhibit negative behavior after the third violation will be dealt with on an individual basis.

**\*\*Please note:** If necessary, this series of consequences may be adjusted to meet the needs of each individual student.

**Severe Clause:** Any student who severely disrupts class by fighting, destroying property, refusing to follow directions, talking back to the teacher or any other behavior not conducive to a positive learning environment will be removed immediately from the classroom and sent to administration.