



# SANTA ROSA JUNIOR COLLEGE

**MATH 16: Introduction to Math Analysis**  
(1105)– 4.0 units – Fall 2022

**When:** Monday & Wednesday 9:00 am – 11:00 am

**Where:** Kunde 104

**Instructor:** Kat Valenzuela

**Email:** [kvalenzuela@santarosa.edu](mailto:kvalenzuela@santarosa.edu)

- Please use proper English and grammar in all emails. Text language, emotions, and emojis are not considered proper English.
- Email will be checked on normal class days.

**Phone:** 707-778-2474

**Office:** Kunde 213

**Office Hours:** Monday & Wednesday 9:00 am – 10:00am, Tuesday & Thursday 8:00 am – 9:00 am

**Content:** Presents techniques of calculus with emphasis placed on the application of these concepts to business and management related problems. The applications of derivatives and integrals of functions including polynomials, rational, exponential and logarithmic functions are studied.

**Prerequisite:** Completion of MATH 154 or MATH 156 or MATH 155 or AB705 placement into Math Tier 3 or higher.

*Preparedness: AB705 & AB1705 eliminates the requirement and opportunity of taking a prerequisite course, in our case Intermediate Algebra. However; students are responsible for this prerequisite material. You are responsible for knowing the concepts taught in Intermediate Algebra and Beginning Algebra. In order to be successful, you will need to spend extra time outside of class reviewing the prerequisite material you are missing, on top of the material related to this course. We will spend time in class focusing on the Statistics and required material in the COR. It is assumed that enrollment in this class signifies to me that you have met the prerequisite material.*

**Course Outline of Record:** is available online: go to the SRJC homepage and search for course outline and the type in MATH 16 under the course.

## Required Materials:

- Textbook: Calculus & Its Applications 14th Edition. Author(s): Goldstein, Larry | Lay, David | Schneider, David | Asmar, Nakhle. Pearson. I will be teaching the course with the 14th edition of our textbook. If you choose an earlier/different version, it is up to you to reconcile the differences between editions.
- A graphing calculator without a computer algebra system (CAS). You can use any technology you choose to complete the homework; however, that is not a substitution for not understanding the mathematics behind the computations. On the Exams the allowable technology will be specified.
- Canvas will not be used.

## Class Structure:

- Give yourself the best chance of succeeding by:
  - Meeting the prerequisites

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- Providing a good-faith effort
- Communicating often and taking the time to formulate good questions
- Having patience
- Exhibiting academic integrity
- Attend class each day, & work on the homework
- Visiting Office Hours
- Read the text before attempting the homework
- Know when the due dates for quizzes, & exams
- Strive to be “impossible to be misunderstood”
- Realizing that your work will be graded in accordance with a college transfer level, math class
- Our class is a place reserved for learning. Being kind, open-minded, respectful, patient, and tolerant are qualities conducive to learning. It is expected that you will be prepared to learn and exhibit these behaviors.
- It is critical that students work on homework frequently throughout the term.
- The written exams in our class will be graded according to mathematical standards that accompany a college transfer level math class.
- When developing a logical argument or asking a question, please make it a goal to be “impossible to be misunderstood” and take the care and time to formulate good questions, before asking them.
- Read all the emails, homework, quizzes, exams, and any communications you have from me carefully.
- This class will be utilizing technology; however, that is not a substitution for not being able to utilize mathematical notation correctly, appropriately, and efficiently.
- It is critical that students work on homework frequently throughout the semester.
- No active (ear, cell, smart) phones or computers are allowed during class. Please turn them off and put them away.
- My goal is to have a typical day in class go as follows: We will discuss a new topic for a while, and then, time permitting, work on some exercises together. We’ll take a break and then do the same thing for the remaining time. You will likely need a pencil and paper every day in class. You are expected to work on homework outside of class almost every day—as often as you need—in order to succeed in the class. Your success depends greatly on the amount of work that you put into the class.
- The quizzes, exams and final will be comprised of topics we discuss in class AND the assigned homework so, PLEASE COME TO CLASS AND KEEP UP WITH THE HOMEWORK (including readings).

### Academic Integrity

All work is to be original; verifiable plagiarism or academic dishonesty of any kind will result in recording an F for the class or being dropped from the class. Students who plagiarize or cheat may also be referred to the Vice President of Student Services for discipline sanction, in cases of egregious violation.

### Accommodations for Students with Disabilities

Please contact me privately regarding concerns about accommodations. If you have not received authorization from DRD, it is recommended that you contact them directly. DRD’s link: <https://drd.santarosa.edu>

**Your Responsibility:** A college transfer level math class requires a great amount of discipline and continual self-monitoring. In order to be successful each student is expected to:

1. Attend office hours regularly.
2. Be respectful of your fellow classmates. You will be asked to leave the class if you are not ready to

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learn.

3. We will listen respectfully when someone else is talking, we will be respectful and polite even when we disagree with another's viewpoint.
4. Be an active participant during class.
5. Quietly listen to lecture and actively take notes.
6. Class is a place reserved for learning. Being kind, open-minded, respectful, patient, and tolerant are qualities conducive to learning. It is expected that you are prepared to learn and exhibit these behaviors.
7. Read each section in the book before attempting the homework. You will be surprised how much you understand in class, and feels easier when you do this!
8. It is critical that students work on homework frequently during the semester. Students are expected to work on homework exercises out of the text.
9. This class will be utilizing technology; however, that is not a substitution for not being able to utilize mathematical notation correctly, appropriately, and efficiently.
10. The written exams in our class will be graded according to mathematical standards that accompany a college transfer level class. Please keep that in mind when you are writing up your exams.
11. When developing a logical argument or asking a question, please make it a goal to be "impossible to be misunderstood" and take the care and time to formulate good questions, before asking them.
12. Read all the emails, homework, quizzes, exams, and any communications you have from me carefully.
13. Know how to gain access to the Mathematics & Computer Lab, & office hours are and visit as often as you need or want.
14. Review previous sections. Continual studying is much more rewarding and less stressful than cramming.
15. Study early and study often!
16. Be aware of the date of the quizzes, exams, and final.
17. Problems you got wrong or partial credit on from your exams and quizzes is your responsibility to understand why. Try to work the problem out at home first and if you are still struggling come talk to me if you have questions.
18. Be patient with yourself and keep at it. Persistence, and hard work leads to success. You may need to find your own mental fortitude.

*Fortitude Definition:*

*strength of mind that enables a person to encounter danger or bear pain or adversity with courage, strength.*

19. Come talk to me for any reason! If you are having trouble, problems with something or cannot make class let me know as soon as you can. I am more willing to help you when you let me know early and have an open communication with me. I am less likely to accommodate circumstances when things arise at the last minute.
20. Students are required to have a text for our course. Our text is available nowadays in many different forms; e.g., as a traditional textbook, in electronic format, etc. You are welcome to choose the one that works best for you; you may have a preference or there may be cost savings with one format versus another.

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21. I will be teaching the course with the 14th edition of our textbook. If you choose an earlier/different version, it is up to you to reconcile the differences between editions.
22. Preparedness: AB705 & AB1705 eliminates the requirement and opportunity of taking a prerequisite course, in our case Intermediate Algebra. However; students are responsible for this prerequisite material. You are responsible for knowing the concepts taught in Intermediate Algebra and Beginning Algebra. In order to be successful, you will need to spend extra time outside of class reviewing the prerequisite material you are missing, on top of the material related to this course. We will spend time in class focusing on the Statistics and required material in the COR. It is assumed that enrollment in this class signifies to me that you have met the prerequisite material.

**Late Work:** Quizzes, exams, and the final will **NOT** be taken late. NO EXCEPTIONS!

**Attendance:** Attending class regularly greatly increases the likelihood of success in the course; however, I believe that adult college students know this (or, are learning this), and will make their own choice regarding attendance. There are no points associated with attendance. I am required to follow College Policy regarding attendance: A student may be dropped from any course when that student's absences exceed ten percent (10% constitutes an "excessive" number of absences for this course) of the total hours of class time. Students who fail to attend the first-class meeting may be dropped from the course. Students who enroll in the course and do not attend the first two class meetings are declared "No-Show" and will be dropped from the course.

#### Activity Details

##### Take Home Quizzes (Four at 30 points each; only top three count toward your grade)

A hard copy of the quiz will be handed out only in class. No electronic copies will be given. You will be allowed one week to finish each quiz. You will only be allowed to use class resources on this quiz. These quizzes will be hand-written assuming you have completed the homework that is relevant to the quiz. You will be notified of the quiz topics and the materials you can use on the quiz. You will turn in your hand-written quiz on the specified date at the beginning of class. No make-up, late, or electronic quizzes will be accepted. Quizzes are usually returned, graded, after one week of the due date. Students are asked to review their graded quizzes and wait at least 48 hours to discuss questions and ask for further feedback on graded quizzes.

##### Exams (Two at 100 points each)

These will be taken in our classroom on Wednesday of week 7 and week 14. You will be notified of the exam topics and the materials you can use on the exams prior to each exam. These exams may only be taken at a different time with advanced notice and must be taken prior to the original scheduled date. Exams are usually graded and returned no later than one week of the exam date. Students are asked to review their graded exams and wait at least 48 hours to discuss questions and ask for further feedback on graded exams.

**Note:** In case of an emergency immediately before (only) one of these exams, it is possible to use a portion of your Final Exam percentage (only the topics on the Final Exam, as determined by me, that are associated with the exam that you missed), provided that:

- Sans the exam you miss, you have a passing grade going into the Final Exam.
- You have regular attendance and have been providing a good-faith effort in the class, as determined by me.
- The distribution of points according to topics may be different on your Final Exam as opposed to the Standard Final Exam (below).

**Final Exam (150 points)**

Be prepared for a mostly cumulative final exam. It will be written to take about 2.5 hours and will be given at the College-designated time. You will be notified of the exam topics and the materials you can use on the final prior to the final. The final can only be taken at a different time with advanced notice and must be taken prior to the original scheduled date. Final exams are not returned to the students; however, you are welcome to come by during the following semester to review your final exam.

**Note:** In case of an emergency immediately before the Final Exam, it is possible to take an Incomplete Grade for the class, provided that you have a passing grade going into the Final Exam, and take the Final during a subsequent semester.

- If you use your smartphone/device during class, I will deduct points from your cumulative score in the gradebook.

**MATH 16 GRADE BREAKDOWN**

| Activity<br>(NO LATE WORK ACCEPTED; ALLOWED RESOURCES<br>WILL BE DESCRIBED IN THE INSTRUCTIONS FOR EACH<br>ACTIVITY) | Points<br>Possible | Your<br>Points | Your<br>Cumulative<br>Points | Cumulative<br>Points<br>Possible | Your<br>Cumulative<br>Percentage |
|----------------------------------------------------------------------------------------------------------------------|--------------------|----------------|------------------------------|----------------------------------|----------------------------------|
| Quiz #1 Thursday, September 15 <sup>th</sup>                                                                         | 30                 |                |                              | 30                               |                                  |
| Exam #1 Thursday, September 29 <sup>th</sup>                                                                         | 100                |                |                              | 130                              |                                  |
| Quiz #2 Thursday, October 13 <sup>th</sup>                                                                           | 30                 |                |                              | 160                              |                                  |
| Quiz #3 Tuesday, November 8 <sup>th</sup>                                                                            | 30                 |                |                              | 190                              |                                  |
| Exam #2 Thursday, November 17 <sup>th</sup>                                                                          | 100                |                |                              | 290                              |                                  |
| Quiz #4 Thursday, December 8 <sup>th</sup>                                                                           | 30                 |                |                              | 320                              |                                  |
| Take out lowest Quiz Score                                                                                           | -30                |                |                              | 290                              |                                  |
| <i>Final Exam Thursday, December 15<sup>th</sup> 7:00 – 9:45am</i>                                                   | 160                |                |                              | 450                              |                                  |

**Grading Policy**

Letter grades will be assigned on a scale no stricter than the following:

| Letter Grade | Percentage |
|--------------|------------|
| A            | 90 to 100  |
| B            | 80 to 89   |
| C            | 70 to 79   |
| D            | 60 to 69   |
| F            | 0 to 59    |

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### Tentative Schedule

(Note that the ideal schedule is just that—ideal. Our actual pace may cause us to run a little behind or ahead of the ideal schedule throughout the semester... hopefully we stay ahead more often than behind!)

| <b>Week Number</b> | <b>Date (Week Beginning...)</b> | <b>Section Number and Title from Our Text<br/>Read these sections before they are covered</b>                                                                                  | <b>Homework Assignment</b>                                           |
|--------------------|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| 1                  | August 15                       | 1.1: The Slope of a Straight Line<br>1.2: The Slope of a Curve at a Point                                                                                                      | 1.1: 1-67 odd<br>1.2: 1-41 odd                                       |
| 2                  | August 22                       | 1.3: The Derivative and Limits<br>1.4: Limits and the Derivative<br>1.6: Some Rules for Differentiation                                                                        | 1.3: 1-77 odd<br>1.4: 1-69 odd<br>1.6: 1-55 odd                      |
| 3                  | August 29                       | 1.7: More about Derivatives<br>1.8: The Derivative as a Rate of Change<br>2.1: Describing Graphs of Functions                                                                  | 1.7: 1-49 odd<br>1.8: 1-31 odd<br>2.1: 1-37 odd                      |
| 4                  | September 5                     | <i>Monday: No Class</i><br>2.2: The First- and Second-Derivative Rules<br>2.3: The First- and Second-Derivative Tests and Curve Sketching<br>2.4: Curve Sketching (Conclusion) | 2.2: 1-43 odd<br>2.3: 1-45 odd<br>2.4: 1-37 odd                      |
| 5                  | September 12                    | <i>Thursday: Quiz #1 Due</i><br>2.5: Optimization Problems<br>2.6: Further Optimization Problems                                                                               | 2.5: 1-31 odd<br>2.6: 1-27 odd                                       |
| 6                  | September 19                    | 2.7: Applications of Derivatives to Business and Economics<br>3.1: The Product and Quotient Rules                                                                              | 2.7: 1-21 odd<br>3.1: 1-67 odd                                       |
| 7                  | September 26                    | <i>Thursday: Exam #1</i><br>3.2: The Chain Rule and the General Power Rule<br>3.3: Implicit Differentiation and Related Rates                                                  | 3.2: 1-59 odd<br>3.3: 1-45 odd                                       |
| 8                  | October 3                       | 4.1: Exponential Functions<br>4.2: The Exponential Function $e^x$                                                                                                              | 4.1: 1-43 odd<br>4.2: 1-45 odd                                       |
| 9                  | October 10                      | <i>Thursday: Quiz #2 Due</i><br>4.3: Differentiation of Exponential Functions<br>4.4: The Natural Logarithm Function                                                           | 4.3: 1-41 odd<br>4.4: 1-52 odd                                       |
| 10                 | October 17                      | 4.5: The Derivative of $\ln(x)$<br>4.6: Properties of the Natural Logarithm Function                                                                                           | 4.5: 1-35 odd<br>4.6: 1-49 odd                                       |
| 11                 | October 24                      | 5.1: Exponential Growth and Decay<br>5.2: Compound Interest<br>5.3: Applications of the Natural Logarithm Function to Economics                                                | 5.1: 21, 27-33 odd, 39-51 odd<br>5.2: 3-23 odd & 27<br>5.3: 1-27 odd |
| 12                 | October 31                      | 6.1: Antidifferentiation<br>6.2: The Definite Integral and Net Change of a Function                                                                                            | 6.1: 1-65 odd<br>6.2: 1-41 odd                                       |
| 13                 | November 7                      | <i>Tuesday: Quiz #3 Due</i><br><i>Thursday: No Class</i><br>6.3: The Definite Integral and Area under a Graph                                                                  | 6.3: 1-43 odd                                                        |
| 14                 | November 14                     | <i>Thursday: Exam #2</i>                                                                                                                                                       | 6.4: 1-45 odd                                                        |

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|        |             |                                                                                                                                                                      |                                                 |
|--------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
|        |             | 6.4: Areas in the xy-Plane<br>6.5: Applications of the Definite Integral                                                                                             | 6.5: 1-25 odd                                   |
| 15     | November 21 | <i>Thursday: No Class</i><br>7.1: Examples of Functions of Several Variables<br>7.2: Partial Derivatives<br>7.3: Maxima and Minima of Functions of Several Variables | 7.1: 1-25 odd<br>7.2: 1-33 odd<br>7.3: 1-51 odd |
| 16     | November 28 | 9.1: Integration by Substitution<br>9.3: Evaluation of Definite Integrals<br>9.5: Some Applications of the Integral                                                  | 9.1: 1-33 odd<br>9.3: 1-15 odd<br>9.5: 1-11 odd |
| 17     | December 5  | <i>Thursday: Quiz #4 Due</i><br><i>Review</i>                                                                                                                        |                                                 |
| Finals | December 12 | <i>Final Exam:</i><br><i>Thursday, December 15<sup>th</sup> 7:00 – 9:45am</i>                                                                                        |                                                 |