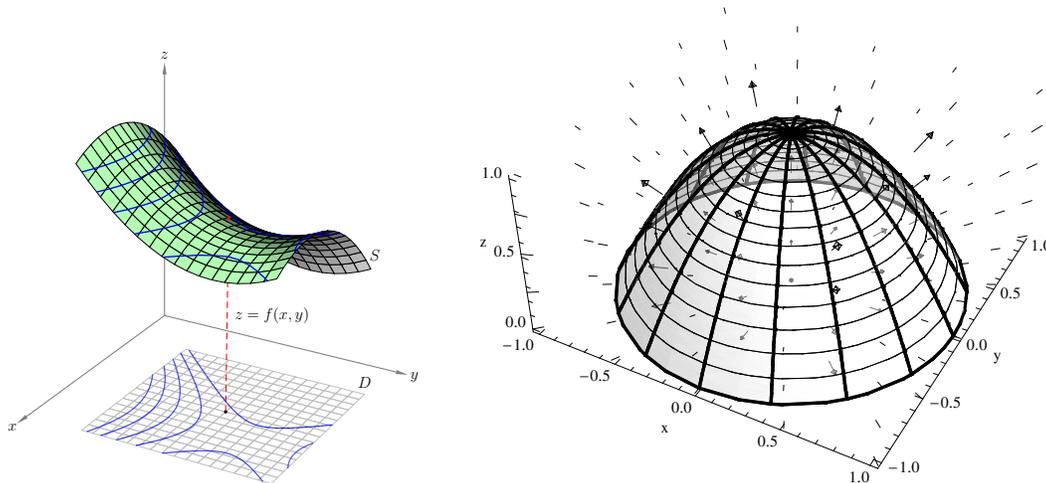


Welcome to Math 280, Intermediate Calculus!

Intermediate Calculus (a.k.a. Calc III) extends the journey we began in first- and second-semester calculus into the third dimension. We will be learning about functions that describe surfaces and volumes in space, and using the tools of calculus to analyze and understand their properties.



Our syllabus, detailing what is expected of you during the semester and how your grade will be assigned, is posted on our course Canvas page and is available on my SCC website, www.sccollege.edu/rscott.

We will be using the same textbook that we used for Math 180 and Math 185:

Stewart, James. *Calculus, Early Transcendentals*, 8e. ISBN 978-1-285-74155-0

Because we only meet for 4 hours each week and your professor loves to ramble on with stories from his childhood, we will be a little cramped for time. The material at the end of the course is entirely new, and I'd like to make certain that we have enough time to understand the meaning, symbolism, and fascinating applications of vector calculus.

To this end, I would like for you to complete the following BEFORE our first Zoom meeting on Tuesday February 9, 2021.

1. *Reply to this email.* (This means to hit the “reply” button on your email app; please do *not* start a new email thread.) Please tell me your name, where and when you took the second calculus course, and something nice about yourself. This email reply is the first homework assignment towards your grade in the course.
2. Read Sec. 12.1.
 - (a) Recognize the right-hand rule for rectangular coordinate systems.
 - (b) Locate points in three-dimensional space (denoted \mathbb{R}^3) using rectangular coordinates.
 - (c) Sketch the graphs of planes in \mathbb{R}^3 . Examples 1 and 3 and Figures 7-10 on page 793-4 will be helpful. In addition, I have posted a document titled “Convincing Sketches of Surfaces in \mathbb{R}^3 , Part I” on the course Canvas page and on my SCC website www.sccollege.edu/rscott that describes how to, uh, make convincing sketches of surfaces in \mathbb{R}^3 .
 - (d) Know and apply the distance formula for \mathbb{R}^3 .
 - (e) Know and apply the equation of a sphere in \mathbb{R}^3
3. Do Sec. 12.1 #1, 3-6, 8, 11-13, 15, 17, 18, 25, 27, 29, 30. You will scan and submit this section through the course Canvas page by 1615 hrs on Tuesday, February 9, 2021.

4. Read Sec. 12.2. (If you've ever taken physics, this will be very familiar. If you haven't taken physics, then you must become very familiar with this section. Don't be afraid to read it a number of times, or to search on the Internet for other explanations if you don't fully understand the reading.)
 - (a) Know and apply the Parallelogram Law for vector addition.
 - (b) Know and apply scalar multiplication for vectors.
 - (c) Know and apply the geometric interpretation of vector subtraction. (Geometric vector subtraction is covered on the middle of page 793. This turns out to be an EXTREMELY important idea throughout the rest of the course.)
 - (d) Know how to represent a vector in component form and in standard basis vector form.
5. Do Sec. 12.2 #1, 2, 4, 5, 7, 9, 11, 14, 19, 20, 22, 23-25, 27, 28, 31, 32, 33. This section is to be submitted through Canvas by 1615 hrs on Thursday, February 11, 2021.

I expect you to complete this assignment to the best of your ability *before* the first Zoom meeting. Use all the resources that are available to a student in the 21st century: working with friends, emailing the professor, studying solutions in the student solution book, checking for additional resources online: YouTube (Khan Academy, PatrickJMT, 3Blue1Brown), Paul's Online Math Notes, etc.

During the first Zoom meeting we will do a number of applications of vector algebra similar to those at the end of Sec. 12.2, and then we will move on to Sec. 12.3. You will sign in to all Zoom meetings through the course Canvas page.

I look forward to meeting you all on Tuesday, February 9, 2021, and to a great semester at Santiago Canyon College.

Sincerely,



Randy Scott

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