

**Due: December 6, 2007 5:30 pm (during class)**

### DIRECTIONS

1. In accordance with syllabus policy (page 2, section on Academic Integrity) in order to receive credit for this assignment you must adhere to the instructions set forth in this assignment, as explained in these directions. Moreover, you must attach this page to the assignment, as a cover sheet, signed and dated. If you emailed the assignment to me, you must still hand in this signed and dated document, in order to receive credit.
2. You may consult with the instructor, the notes you took in class, and any text or URL. You may also consult with your fellow classmates, if you choose, *but* the solutions to the problems must be written up by your own hand individually. (In other words, ‘consulting’ here doesn’t mean copying what your fellow classmate does without understanding what you’re copying.) You may not, however, consult with any other faculty member at Capitol College or elsewhere. If you consulted any references, you should cite. Please adopt the following format when citing:

**(Example)**

“According to Eqn 1 [*Jones* (1992), 11] ...”

...where the complete reference of *Jones* is found in your list of references, stapled at the end of the assignment. The page number follows the date (in parentheses). Though standards in technical writing vary, I would prefer you list a citation in the following format:

**Example for a book:**

Jones, Robert. *Elementary Linear Algebra*. (Boston: Harcourt Press, 1992)

**Example for an article:**

Jones, Robert. “Boundary Value Equations: An Overview”. *American Mathematical Monthly*, vol. 3 n2 (1998), 1227-1135.

**Example for an electronic source, (website, pdf or other):**

Jones, Robert.(2003 – use date it was last updated if it is a webpage) “Some Properties of Orthogonal Functions” URL = <<http://www.jrworld.org/~jroberts/...> >

Please use discretion when citing. If you stumble across a formula in some source, which I have asked you to explicitly derive, you obviously cannot cite it. This is taken care of by the fact that you must show all your work in maximal reasonable detail. An answer with no work shown gets a 0.

I have read, understood, and have complied with the instructions set forth in this assignment

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(Signature)      (date)

**Directions:** Please complete the following problems listed below, in legible and neat form. Illegible work will not be graded, and marked with a 0 grade.

- I. (25) a.) (5)** Log on to:  
<http://www.slu.edu/classes/maymk/SketchpadApplets/TrigFunctions.html>  
and for practice click on all 3 boxes (“Show sin and cos,” “Show sec and tan,” “show csc and cot”). You should see a pretty multi-colored figure consisting of several montaged triangles both inside and outside the unit circle. Each colored segment of these triangles represents the value of one of the six trigonometric functions. For fun and practice, place your cursor at the point **P** on the unit circle and drag the point around the circle and observe how these six functions visually vary! (Recall remark in Nov. 8<sup>th</sup> class: some quantities can reach infinity and reach such values infinitely fast). After you get accustomed to playing with the Applet, complete **Sample Worksheet for this Applet** (click on link at bottom of page). Print out a hard copy and either write in your values by hand or type them in, using the data from the Applet.
- b.) (10) i.) (2 pt)** Exercise 17, P. 446  
**ii.) (2 pt)** Exercise 22, P. 446  
**iii.) (2 pt)** Exercise 53, P. 446  
**iv.) (4pt)** Exercise 72, P. 447
- c.) (10) Obtain the** <http://math.dartmouth.edu/~klbooksite/2.09/209exercises.pdf>  
exercises and choose any **five** for 10 possible points (let each problem count **2** points, as opposed to 1 pt., as stated on the sheet.)
- II. (25) a.) (5)** Exercise 82, p. 448  
**b.) (2)** Exercise 4, p. 456  
**c.) (3)** Exercise 44, p. 456  
**d.) (5)** Exercise 50, p. 457  
**e.) (5)** Exercise 54, p. 457  
**f.) (5)** Exercise 61, p. 457
- III. (25) a.) (3)** Exercise 58, p. 467  
**b.) (5)** Exercise 60. p. 467  
**c.) (5) Log on to** <http://www.plu.edu/~heathdj/java/calc2/Integral.html>  
and run the applet for a total of 5 times, for varying constants for **sin** and **cos**. Prepare a simple table (3 columns, 5 rows) in which you recorded your values for your chosen constant on the leftmost column and the middle column specifies your choice of function (whether cos or sin) the signed area on the right hand column.  
**d.) (7)** Verify your answers in c.) by computing the areas by hand.  
**e.) (2)** Exercise 16, p. 475  
**f.) (5)** Exercise 52 (b), p. 476
- IV. (25) a.) (3)** Exercise 16, p. 485  
**b.) (4)** Exercise 23, p. 485  
**c.) (5)** Exercise 58, p. 486  
**d.) (3)** Exercise 30, p. 497  
**e.) (5)** Exercise 48, p. 506 ((a): 3pts, (b) 2pts)  
**f.) (5)** Exercise 78, p. 517