

**Math 244: Differential Equations for Engineers**  
**Summer 2003, Section C1**  
**Assignment 1: Questionnaire/Review problems (2 points)**  
**Due Monday, June 2, 2003**

Please complete this questionnaire and try the review problems on the back. Your answers will *not* be graded; merely completing and returning both sides is worth 2 points. If you get stuck in the middle of one of the problems, or can't figure out how to do a problem at all, just write "I don't know"; you will *not* be penalized for this in any way. The intent of this assignment is to gauge your mathematical background and interests, so I have a better idea of what topics in differential equations I should emphasize and what review topics I may need to cover.

Name:

Email address:

Major or area of study:

Are there skills (e.g. equation solving or analysis techniques) that you would particularly like to learn in this class? Are there skills that professors in other subjects have mentioned as being particularly important for you to learn in this class?

**Review problems:**

1. Express the product  $(6 + 7i)(3 - 2i)$  as a single complex number of the form  $a + bi$ . Find the complex conjugate of your answer.

$$18 + 21i - 12i - (-14) = 32 + 9i; \text{ conjugate is } 32 - 9i$$

2. Find the determinant of the matrix

$$\begin{bmatrix} 2 & 3 \\ -1 & -1 \end{bmatrix}$$

$$2 \cdot -1 - (-1) \cdot 3 = 1$$

3. Use integration by parts to evaluate the indefinite integral  $\int 3xe^x dx$ .

$$u = 3x dx, dv = e^x, v = e^x, du = 3 dx$$

$$\int 3xe^x dx = 3xe^x - \int 3e^x dx = 3xe^x - 3e^x + C$$