

## Physics 350 Lab 10: Matrices and Vectors in IDL

**Objective:** The objective of this lab is to make you familiar with the format in which vectors are represented in IDL and to introduce you to matrix multiplication in IDL.

Prior to lab you should read the lab 10 supplement.

**Procedure:** 1. (a) Enter the matrix  $A$ , given below, in IDL. Write down the correct command to print out the element in the third row, second column of  $A$ , whose value is 5.

$$A = \begin{pmatrix} 0 & 1 & 1 \\ 2 & 3 & 2 \\ 4 & 5 & -1 \end{pmatrix} \quad (1)$$

(b) Enter the matrix  $B$ , given below, in IDL, and use IDL to calculate the matrix multiplication of  $A$  and  $B$ .

$$B = \begin{pmatrix} 2 & -2 & 1 \\ 1 & 0 & 1 \\ -1 & 1 & 0 \end{pmatrix} \quad (2)$$

(c) In IDL calculate the product  $A*B$  and print the result. Describe how IDL came up with the result it did. This is just a reminder that “regular” multiplication of  $A$  and  $B$  using the symbol “\*” does *not* give you the result you would expect from matrix multiplication.

2. In Lab 7 we constructed rotation matrices in MAPLE. In this problem, do the same thing, but in IDL. You should turn in a copy of your code, and the output of IDL. The easiest way to get the IDL output is to either print out your IDL buffer from within xemacs or save the Console from the IDL Workbench as a file.