CS638-2 Fall 1999
Quiz 1 - September 9, 1999 closed book and notes!

Name: **CS Login:**

Notations:

Scalars are denoted as non-bold, lower case letters (x,y,z)
Vectors are denoted as bold, lower case letters (**x**, **y**, **z**)
Matrices are denoted as bold, upper case letters (**X**, **Y**, **Z**)
The dot product of vectors **x** and **y** is denoted **x•y**
The vector cross product of **x** and **y** is denoted **x×y**

Question 1: (1 point each)

Name 2 parts of the eye that refract light as part of the system that focuses light on the retina:

lens, aqueous humor, cornea

Question 2: (1 point each)

Name 2 graphics output devices that are vector devices (not devices that simulate vector devices):

Pen plotter, calligraphic scope

Question 3: (2 points)

Describe a method to determine if 3 points in the plane (x1, y1), (x2,y2), (x3,y3) are collinear:

The determinant x1,y1,1; x2,y2,1; x3,y3,1 is zero (see homework 1)

Question 4: (1 point)

If lightness is linearly coded between 0 and 255, is the difference between 100 and 101, or the difference between 200 and 201 more noticeable (perceptually)?

100 and 101 (it's 1%, as opposed to 1/2%)

Question 5: (1 point part A, 2 points part B)

Given the following matrices **A** and **B**, and vector **c**

$$\mathbf{A} = \begin{bmatrix} 9 & 7 & 3 & 5 & 2 & 4 & 6 \\ 1 & 0 & 1 & 0 & 1 & 0 & 1 \end{bmatrix}, \mathbf{B} = \begin{bmatrix} 1 & 0 \\ 3 & 1 \\ 5 & 0 \\ 7 & 1 \\ 9 & 0 \\ 8 & 0 \\ 9 & 1 \end{bmatrix}, \mathbf{c} = \begin{bmatrix} 0 \\ 1 \end{bmatrix}$$

Which of the following is "legal" to compute: **A B c** or **B A c**?

A B c

Compute its value:

[18; 1]