COM1370 Summer 2002 -- Midterm Exam Guide

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The notes below are not in the precise form of exam questions, but they should be more than adequate in helping you study for the Midterm.

1. Trigonometry basics: Be able to plot sine and cosine reasonably accurately from -2π to +2π. Know conversions between radians and degrees for 30°, 45°, 90°, etc. Know how to compute the sine and cosine of the most common angles, including π/4.

2. 2x2 transformations: Be able to correctly write out a rotation matrix and scaling matrix.

3. Computations with 2D vectors and 2x2 matrices: Be able to add vectors, multiply matrices together, in the correct order, and transform vectors with matrices. All these computations are to be done manually with numerical answers. Items such as $\sqrt{2}$ can be kept in that form.

4. Homogeneous coordinates. Be able to write down a scaling, rotation or translation matrix in 3x3 homogeneous coordinate form for 2D.

5. Compound matrix manipulations using homogeneous coordinates. Be able to show various relations and identities, such matrix multiplication that shows that a translation of -10,20 is the inverse of 10,-20.

6. Transformations that produce a given effect. Given two different positions and orientations of an object, figure out what matrix or product of matrices will produce one from the other.

7. Bézier curve. Show the relation between drawing a Bézier curve and computing some points using Equation 11.29, as well as additional material I'll present in class.

8. Boundary fill of irregular region. Given the BoundaryFill4 algorithm (pg. 981) manually do a small fill with it to demonstrate your understanding of it. Your answer will take the form of Fig. 19.56, pg. 982.

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