Math 401 - Homework #3
Computer Graphics (part 2)
due in class Thursday, 6/7

Instructions: Work through the problems below. Write down your solutions on paper. You can use MATLAB for computations unless the problem says "Must do all computations by hand." For problems in which you use MATLAB to do computations, I do not want you to turn in any MATLAB code. You need to clearly present all steps of your solution so that I can follow your thought process without guessing what you are thinking (try writing in complete sentences.)

1. **(Must do all computations by hand.)** Do Exercise 3.2 from the text. (The second y is a typo. Treat it as if it says "+1 in the x-direction, 2 in the y-direction, and -7 in the z-direction.")
2. Do Exercise 3.15 from the text.
3. Do Exercise 3.17 from the text.
4. **(Must do all computations by hand.)** Do Exercise 3.20 from the text. Give the exact answer (not an approximation).
5. Do the following exercises from the text. Each asks for a matrix in $\mathbb{R}^3$ for a rotation about an axis which goes through the origin. Since these are linear transformations, you can present your matrices as either 3×3 or 4×4 (the latter is for use on homogeneous coordinates.)
   (a) Do Exercise 3.22 from the text.
   (b) Do Exercise 3.23 from the text.
   (c) Do Exercise 3.24 from the text.
6. Do Exercise 3.25 from the text.
7. **(Must do all computations by hand.)** Do Exercise 3.28 from the text.
8. Do Exercise 3.40 from the text.