FERPA Waiver: Written Homework
Math 13, Winter 2011

By my signature below, I relinquish my FERPA rights in the following context: My written homework assignments for Math 13 in Winter 2011 may be returned en masse with those of the other students in the class via the homework boxes in the basement of Kemeny Hall. I realize and accept the fact that my score may be visible to others.

If I choose not to relinquish my FERPA rights, I understand that I will have to present my student ID at my instructor's office to retrieve my homework sets.

This waiver does not apply to exams, which will be returned in a private fashion.

Name (please print): _____

Signature: _____

MATH 13, WINTER 2011
WRITTEN HOMEWORK #1

JOHANNA N.Y. FRANKLIN

This assignment will be due on Wednesday, January 12 at 12:30 p.m. in the boxes outside 105 Kemeny. Look for the column of boxes labeled "Math 13, Winter 2011" and put your assignment in the left ("IN") column corresponding to the first letter of your family name (A-F, G-M, N-S, T-Z).

Remember to show your work. A correct answer with no work shown will receive minimal credit. Your solutions should be detailed enough that any of your classmates could understand them simply by reading them.

(1) (Chapter 13 Review, True-False Quiz, #10 and #17) For each of the following statements, state whether it is true or false. If it is true, explain why, and if it is false, either explain why or give an example that shows that it is false.
   (a) For any vectors $\mathbf{a}$ and $\mathbf{b}$ in $\mathbb{R}^3$, $(\mathbf{a}+\mathbf{b})\times\mathbf{b}=\mathbf{a}\times\mathbf{b}$.
   (b) If $\mathbf{a}\cdot\mathbf{b}=0$ and $\mathbf{a}\times\mathbf{b}=\mathbf{0}$, then $\mathbf{a}=\mathbf{0}$ or $\mathbf{b}=\mathbf{0}$.

(2) (Chapter 13 Review, #6) Find two unit vectors that are orthogonal to both $\mathbf{j}+2\mathbf{k}$ and $\mathbf{i}-2\mathbf{j}+3\mathbf{k}$.

(3) Find all values of x such that $\langle x^2, 2, -5x\rangle$ and $\langle x, x^2, 3\rangle$ are orthogonal.

(4) (Section 13.5, #16 plus a little bit)
   (a) Find parametric equations for the line through $(2,4,6)$ that is perpendicular to the plane $x-y+3z=7$.
   (b) At which point does this line intersect this plane?
   (c) At what points does this line intersect the coordinate planes?