Emory University Department of Mathematics & CS
**Math 211 Multivariable Calculus**
Spring 2010

Problem Set # 3 (due Wednesday 10 February 2010)

**Reading:** CM 14.5 and 17.1-3

**1.** CM 14.5 Problems 42, 48, 54, 66.

**2.** CM Project 2 (Matching Birthdays), p. 789-790.

**3.** CM 17.1 Exercises 10, 16, 22, 27.
        Problems 52, 54, 56, 59, 62, 65.

**17.1.65.** Replace the initial paragraph of text with the following:

A line has parameterization $\gamma(t) = \vec{a} + t\vec{b}$ where $\vec{a}$ and $\vec{b}$ are (constant) non-zero vectors in $\mathbb{R}^3$ such that $\vec{b}$ is neither parallel nor perpendicular to $\vec{a}$. Let $\vec{r} = x\vec{i} + y\vec{j} + z\vec{k}$ be a general vector in $\mathbb{R}^3$. For each of the planes described in (a)-(c), pick the equation (i)-(ix) describing that plane. For example, the equation $\vec{n} \cdot (\vec{r} - \vec{P}) = 0$ describes the plane passing through $\vec{P}$ and normal to $\vec{n}$. Explain your choices.

**4.** CM 17.2 Exercise 10, 12.
        Problem 28, 29, 35.

**5.** CM 17.3 Problem 21-28 (you don't need to explain your answers).

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