MAT 21 D - Problem Set 4
Due beginning of discussion session on May 4th

Problem numbers are from Thomas' Calculus, 13th edition. If unsure about which problem to solve, ask. Collaboration is permitted but every student must write his or her own solution; looking for solutions from external sources (books, the web, material from previous years, etc.) is prohibited.

1 Solve and turn in the following problems:

1. Consider a 3-dimensional cube and pick two adjacent faces of the cube. Pick a vertex common to the two faces. Consider the two diagonals of the two faces meeting at the chosen vertex. What is the angle between the two diagonals?

2. Find the length of the curve $\mathbf{r}(t) = (\cos\sqrt{t})\mathbf{i} + (\sin\sqrt{t})\mathbf{j} + (\sqrt{t})\mathbf{k}$ for $0 \leq t \leq 1$.

2 Solve but do not turn in the following problems:

Section 13.1: 1, 9, 19
Section 13.2: 1
Section 13.3: 1, 11, 13, 15