MATH 2270: QUIZ 6

This quiz has two parts - first complete the first page - DON'T WRITE your name on it and turn it in. Then find a partner and work on the second page. It won't be graded, but we'll go over the answers.

1. How is the course going so far? Do you have any concerns?

2. How do you find the homework / quizzes / exams?

3. What are some things that are going well in the course?

4. What are some things that could be better?

5. Do you enjoy the group work we've done?

6. I'm considering moving the Friday office hour to a different day/time. Is there a time that would work well for you?

1. Which of the following sets are linearly independent subsets of V, the space of all continuous functions?

$$\{t, \sin t\},\ \{t, 1-t, 1+t\},\ \{e^t, e^{2t}\},\ \{e^t, e^{t+2}\},\ \{0, \sin t, \cos t\}$$

2. Suppose that $V = \mathbb{R}^2$. Let H and K be two different 1-dimensional subspaces. Draw a picture of V, H and K.

A) The **intersection** of two sets H and K is the set of all points that are in both of them. We denote this set by $H \cap K$. Draw a picture of $H \cap K$.

B) The **union** of two sets H and K is the set of all points that are in either H or in K (or in both). We denote this set by $H \cup K$. Draw a picture of $H \cup K$.

C) In your example is $H \cup K$ a subspace of $\mathbb{R}^2$? Is $H \cap K$?

3. What was the last theorem we proved at the end of class on Tuesday? Use it to discuss the following: If $B = \{\mathbf{b}_1, \ldots, \mathbf{b}_n\}$ is a basis of a vector space V and $C = \{\mathbf{v}_1, \ldots, \mathbf{v}_m\}$ is another basis of V then show that $m = n$. (Hint: What would happen if $m > n$?)

4. Read section 4.7 for Friday. This is the hardest section in the book - and we'll go over it carefully in class.