We will take Vocabulary Quiz 4 during the first 25 minutes of class on Friday, November 22. The quiz will ask you to give definitions, examples, and, possibly, nonexamples, of any of the vocabulary listed at the start of each day in the daily log from Days 1 through 31. Not every day has required vocabulary, and not all definitions and terms within the daily log are candidates for the quiz.

This quiz will be cumulative, and it will cover vocabulary from Days 1 through 41. (It's been a long semester.) I will include at least one concept not tested on the first three quizzes, and I will repeat at least one question verbatim from Quiz 3 (maybe not from Quizzes 1 or 2).

I'll repeat what I said about preparing for all the quizzes with one final change. When I ask you for something *specific*, I mean something *specific*. If I ask for a specific vector space with some property, I don't want some arbitrary space $\mathcal{V}$; I want $\mathbb{F}^n$, or $\mathcal{C}([0,1])$, or $\mathbb{R}^\infty$, or something *specific and concrete*. Same for a linear operator, or a list.

I have specified in the daily log which terms need nonexamples; not all do. You can probably find easy examples and (as needed) nonexamples within the daily log and the textbook, and I encourage you to memorize the ones that you find simplest and most meaningful and accessible. Your definitions should be so precise that I should be able to use them to decide whether any mathematical object I ever encounter does or does not meet the properties under consideration.

Here is how this might look in practice. Suppose that one of the vocabulary terms was "continuous function" (a good candidate if this were a calculus class). I might phrase the question as "What does it mean for a function f on the interval (a,b) to be continuous at the point x_0 in (a,b)? I hope that your precise answer would be that $\lim_{x\to x_0} f(x) = f(x_0)$. I might then ask you for an example of a continuous function defined on the interval $(0,1)$, and I hope you would take the easy way out and say something like $f(x) = 0$ with the added remark that all constant functions are known to be continuous. Last, I might ask you for an example of a function that is not continuous (discontinuous) on $(0,1)$—this is the *nonexample*—and there you probably would go piecewise, say $f(x) = 0$ for $0 < x < 1/2$ and $1/2 < x < 1$ and $f(1/2) = 1$. You would wrap up that nonexample by stating that since $\lim_{x\to(1/2)^-} f(x) = \lim_{x\to(1/2)^-} 0 = 0$ and $\lim_{x\to(1/2)^+} f(x) = \lim_{x\to(1/2)^+} 0 = 0$, the limit $\lim_{x\to 1/2} f(x)$ exists and equals 0, but $f(1/2) = 1 \neq 0$. That is, $\lim_{x\to 1/2} f(x) \neq f(1/2)$, and so f cannot be continuous at $1/2$.

To motivate you to *really* embed this material into your memory, I will put a fairly large number of questions on the quiz for the time allotted. You must have this material ready at your fingertips, without hesitation, to succeed.