You have 10 minutes to answer the following questions. Solutions will be available on the course website for you to check your work.

1 Suppose that $\{\mathbf{v}_1, \mathbf{v}_2, \ldots, \mathbf{v}_n\}$ is a list of vectors in a vector space V. Describe a step-by-step procedure for pruning this list to a new, linearly independent list of vectors which has the same span as the original list. You may take for granted the ability to check whether a particular vector is in the span of some other vectors.

2 Consider a finite-dimensional vector space V and a subspace U of V. Show that if $\dim U = \dim V$, then $U = V$.