Math 320 Linear Algebra
Assignment # 8

1. Suppose the X, Y and Z are sets (don't assume they are sets of vectors they are just sets). Let $f : X \to Y$ and $g : Y \to Z$. Prove that $g \circ f : X \to Z$ is onto then g is onto. If you are new to proving things are onto, this video should help:

   Proving Functions are Onto

2. Show that vector space properties 4,5 and 9 hold for the vector space P_n (that is the space of polynomials of degree n or less.)

   This video might help: Polynomial Vector Spaces

3. The polynomials $x + 1$ and $x^2 + 2$ are "vectors" in the vector space P_2. Describe the set span$(x + 1, x^2 + 2)$.

4. Let V be a vector space.

   (a) Show that if $\vec{v}, \vec{w} \in V$ and $\vec{v} + \vec{w} = \vec{0}$ then $\vec{w} = -\vec{v}$.

   (b) Show that if $\vec{v} \in V$ then $(-1)\vec{v} = -\vec{v}$.

   This video might help: Vector Space Proofs