Homework 1 for Math 140C - Spring 2018

(I) Ch 9, problems 1, 2, 3, 4, 5, 6

(II) Let $A : \mathbb{R}^n \to \mathbb{R}^n$ be a linear operator with $\|A\| \leq \alpha < 1$.

(a) Show that the linear operator $I - A$ is invertible (here, I is the identity).

(b) Find an upper bound on $\|(I - A)^{-1}\|$.

(c) For what values of β are all matrices $I - B$, satisfying $\|B - A\| \leq \beta$, invertible?