Linear Algebra

1. Let S be the subspace of R^3 spanned by the vector $\begin{pmatrix} 1 \\ -1 \\ 1 \end{pmatrix}$. Find two vectors that are orthogonal to each other and that form a basis for $S^{\perp}$. [This is a variation on exercise 2 on page 233.]

2. In the space $C[0,1]$ of continuous functions with the inner product $\langle f, g \rangle = \int_0^1 f(x)g(x)\,dx$, find the vector projection of e^x onto x.