Additional Questions for Homework on Section 5.2.

A. Let $f_1(x) = 1$ and $f_2(x) = x$, and let $S$ be the span of $f_1$ and $f_2$ within $C([-1,1])$. Consider this vector space with the standard $L^2$ inner product. (Note that $f_1$ and $f_2$ are linearly independent and thus form a basis for $S$.) Find an orthonormal basis for $S$.

B. Let $g_1(x) = 1$ and $g_2(x) = x$, and let $W$ be the span of $g_1$ and $g_2$ within $C([0,2])$, and consider the standard $L^2$ inner product for this space. (Note: This is slightly different from the inner product for the previous example.) Find an orthonormal basis for $W$. 