EXTRA CREDIT.

To be written up and submitted separately from regular homework:

(1) Give an example of a vector space V with an inner product, a subspace W and a vector v such that v can not be written as $v = u + w$ where $w \in W$ and $u \in W^{\perp}$.

Note: You can not use integrals or series in your example as they have not been covered yet in MAT157.