Math 1553 Worksheet, Chapter 7

- **1.** True or false (justify your answer!): If u, v, w are vectors in \mathbf{R}^n with $u \perp v$ and $v \perp w$, then $u \perp w$.
- **2.** Let *W* be the set of all vectors in \mathbb{R}^3 of the form (x, x y, y) where *x* and *y* are real numbers.
 - **a)** Find a basis for W^{\perp} .

b) Find the matrix *B* for orthogonal projection onto *W*.

c) Diagonalize *B* by finding an invertible matrix *C* and diagonal matrix *D* so that $B = CDC^{-1}$.

3. Find, and draw, the best fit line y = Mx + B through the points (0,0), (1,8), (3,8), and (4,20).