Linear algebra exercise 03162017 1.

1. (15 points)Let w be a vector in R^n. Let W be the set of vectors that are orthogonal to w. Show that W is a subspace of R^n.
2. (15 points) Find a basis for the subspace W of vectors in that are orthogonal to w = (1, 3, 1). Give the dimension and a geometrical description of W.
3. (30 points) State and prove the Cauchy-Schwartz inequality
4. (10 points) State and prove triangle inequality
5. (10 points) State and prove pythagorean theorem
6. (10 points) Determine the equation of the polynomial of degree two whose graph passes through the points (1, 6), (2, 3), (3, 2).
7. (10%) Give the definition of matrix multiplication