**Linear Algebra (Math 251)**
**Level IV, Assignment 3**
**(2015-16)**







(U,V) = (9\*-1)+(-8\*9)+(9\*1)+(18\*1)

 = -9-72+9+18 = -54

1. **Let *R*3 have the Euclidean inner product. Find the cosine of the angle *θ* between U =(-1,6,2)   and V=(4,3,-5)**
2. **Find all the least squares solution of the linear equation**

**x1 - x2 = 2**

**2x1 + 3x2 = -1**

**4x1 + 5x2 = 2**

**6- Let have the Euclidean inner product. For which values of k are u and v orthogonal?**

**(a) u = (2, 1, 3); v = (1, 7, k) (b) u = (k, k, 1); v = (k, 5, 6)**

**When orthogonal U.V = 0 When orthogonal U.V = 0**

**(u.v)=(2\*1)+(1\*7)+(3k) = 0 (u.v)= = 0**

**9+3k=0 3k= -9 (k+2)(k+3)=0**

**K= - 3 k = - 2, k = - 3**

**7- If P2 have the usual inner product on polynomials and p = 1 - 2x + 3, q = 3 + are the polynomials. Then find**

**(a)**

**(b)**

**(c) < p, q >**

**P=(1,-2,3), q=(3,0,1)**

**(a)=**

**(b)=**

**(c) < p, q >=(1\*3)+(-2\*0)+(3\*1)=6**

8-Show that A= is Hermitian.

A square complex matrix A is said to be Hermitian \* if

= A

= *T*

=

*T*=

While

So A is Hermitian