```
>> X=[3;-4;5]

X =

   3
  -4
   5

>> Y=[-1;-3;2]

Y =

  -1
  -3
   2

>> X'*Y

ans =

   19

>> dot(X,Y)

ans =

   19

>> syms a b c d e f
>> U=[a;b;c]

U =

 a
 b
 c

>> V=[d;e;f]

V =

 d
 e
 f

>> dot(U,V)

ans =
```

d*conj(a) + e*conj(b) + f*conj(c)

>> U'*V

ans =

d*conj(a) + e*conj(b) + f*conj(c)

>> transpose(U)

ans =

[a, b, c]

>> transpose(U)*V

ans =

a*d + b*e + c*f

>> W=[1+3i;2i;1-i]

W =

   1.0000 + 3.0000i
      0 + 2.0000i
   1.0000 - 1.0000i

>> Z=[-2+i;-1+4i;-i]

Z =

  -2.0000 + 1.0000i
  -1.0000 + 4.0000i
     0 - 1.0000i

>> dot(W,Z)

ans =

  10.0000 + 8.0000i

>> W'*Z

ans =

  10.0000 + 8.0000i

```
>> transpose(W)*Z

ans =

 -14.0000 - 8.0000i

>> dot(Z,W)

ans =

  10.0000 - 8.0000i

>> syms x
>> fg=int((1-2*x)*(x+x^2),x,-1,1)

ans =

-2/3

>> magf=int((1-2*x)^2,x,-1,1)

ans =

14/3

>> magg=int((x+x^2)^2,x,-1,1)

ans =

16/15

>> dist=int((1-2*x)-(x+x^2),x,-1,1)

ans =

4/3

>> v1=[1;2;2]; v2=[1;3;1]

v2 =

   1
   3
   1

>> u1=v1
```

u1 =

   1
   2
   2

>> proju1= dot(u1,v2)/dot(u1,u1)*u1

proju1 =

   1
   2
   2

>> u2=v2-proju1

u2 =

   0
   1
   -1

>> v3=[3;1;-1]

v3 =

   3
   1
   -1

>> proju1=dot(v3,u1)/dot(u1,u1)*u1

proju1 =

   0.3333
   0.6667
   0.6667

>> proju2=dot(v3,u2)/dot(u2,u2)*u2

proju2 =

   0
   1
   -1

>> u3=v3-proju1-proju2

```
u3 =

    2.6667
   -0.6667
   -0.6667

>>
```