

CAS math 160 Homework 8

To make vectors with three components, you should not use symbolic variables.

```
a=[8 9 10]; b=[-6 12 4];
```

The projection of a onto b is

```
proj=dot(a,b)/dot(b,b)*b
```

```
proj = 1x3  
-3.0612    6.1224    2.0408
```

The perpendicular component of a relative to b is

```
perp=a-proj
```

```
perp = 1x3  
11.0612    2.8776    7.9592
```

The projection and perpendicular component should be orthogonal to each other. Let's see if the dot product is zero:

```
dot(perp,proj)
```

```
ans = -7.1054e-15
```

Since all calculations are estimates, we can assume that such a small number is zero.