
AE 4532 HW 4 Workspace

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```
clc
clear
close all
```

Q5

```
r1 = [1;1;1];
m1 = 10;
v1 = [0.5;1.25;0.1];

r2 = [-2;3;5];
m2 = 6;
v2 = [-0.25;0.4;2.5];

r3 = [6;-1;-8];
m3 = 3.5;
v3 = [1.2;-2.5;0.25];

r4 = [-3;-4;9];
m4 = 7.5;
v4 = [0.4;-4.5;-1.25];

m_t = m1+m2+m3+m4;

r_c = (r1*m1 +r2*m2+r3*m3+r4*m4)/(m_t);
v_c = (v1*m1 +v2*m2+v3*m3+v4*m4)/(m_t);
Ho_C = m_t*cross(r_c,v_c);

r1_c = r1-r_c;
v1_c = v1-v_c;
r2_c = r2-r_c;
v2_c = v2-v_c;
r3_c = r3-r_c;
v3_c = v3-v_c;
r4_c = r4-r_c;
v4_c = v4-v_c;

Hc_1 = m1*cross(r1_c,v1_c);
Hc_2 = m2*cross(r2_c,v2_c);
Hc_3 = m1*cross(r3_c,v3_c);
Hc_4 = m1*cross(r4_c,v4_c);

Hc = Hc_1 + Hc_2 + Hc_3 + Hc_4;

I1 = mom_tensor(r1);
I2 = mom_tensor(r2);
I3 = mom_tensor(r3);
I4 = mom_tensor(r4);
```

```
I = I1+I2+I3+I4;
```

```
I1_c = mom_tensor(r1_c);  
I2_c = mom_tensor(r2_c);  
I3_c = mom_tensor(r3_c);  
I4_c = mom_tensor(r4_c);  
I_c = I1_c+I2_c+I3_c+I4_c;
```

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