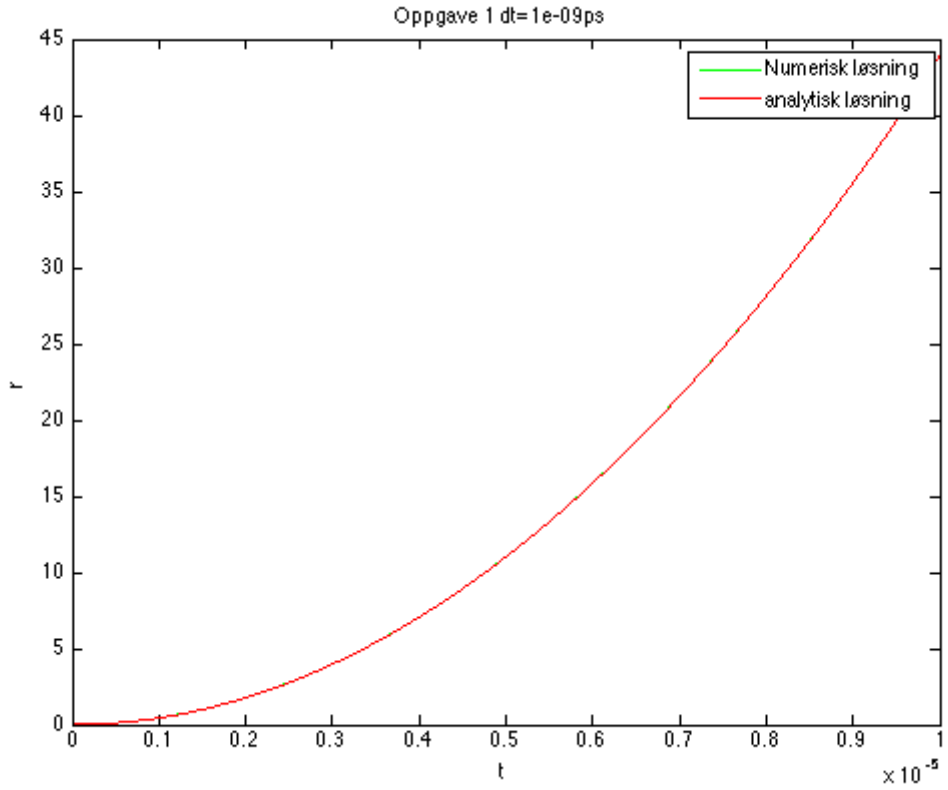
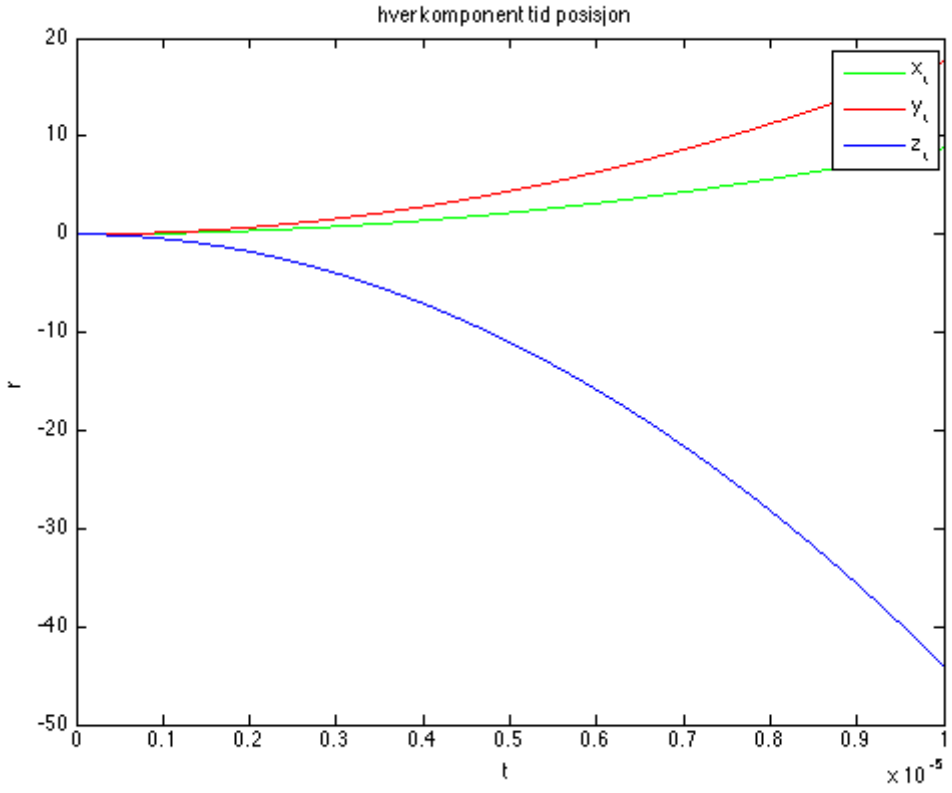
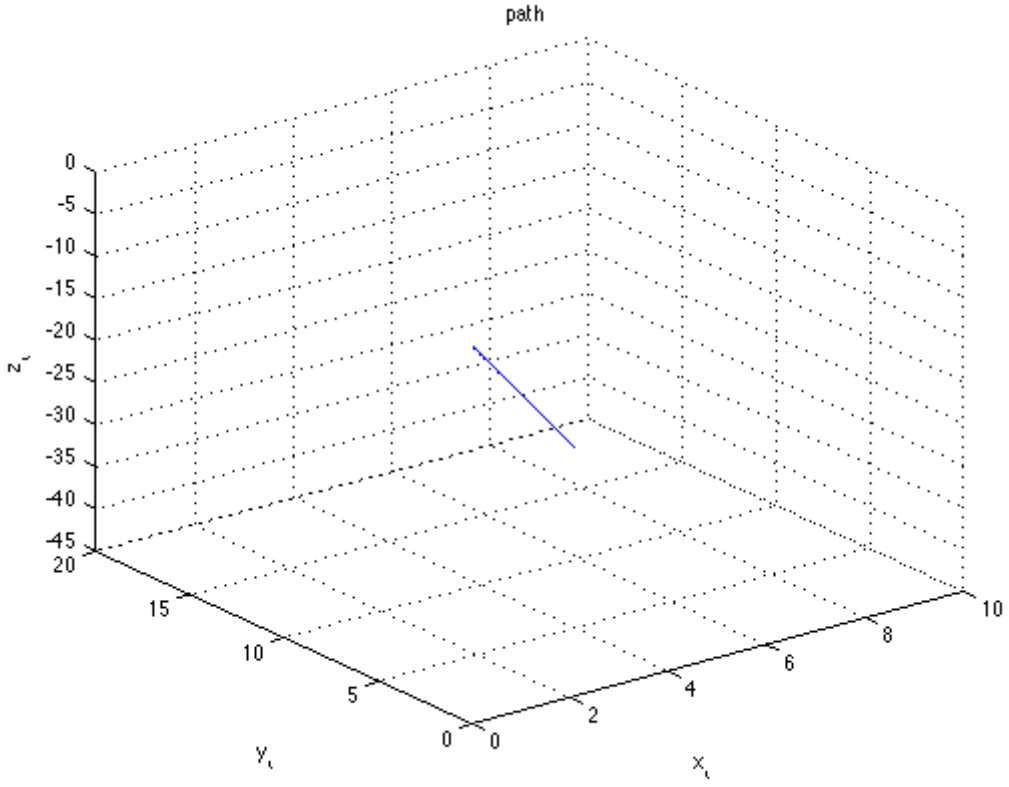
```
function [  ] = oblig2oppgave1( dt )
E = [-5,0,0];
r0 = [0,0,0];
v0 = [0,0,0];
m_e = 9.11e-31;
e = -1.6e-19;
t0 = 0;
t1 = 1*10e-6;
% F og aksellerasjon
F = e.*E;
a = F./m_e;
% initalverdier
r = r0;
v = v0;
%t = linspace(t0,t1,(t1/dt)+1);
ra = r0;
n = t1/dt
t=0;
c=0;
for i=2:n
    v(i,:) = v(i-1,:) + a.*dt;
    r(i,:) = r(i-1,:) + v(i,:).*dt;
    c=c+dt;
    t(i,:)=c;
    %analytic
    ra(i,:) = 0.5.*(a.*c^2);
end

plot(t(:,1),r(:,1),'g',t(:,1), ra(:,1), 'r')
axis('auto');
legend('Numerisk løsning', 'analytisk løsning'); title(['Oppgave 1 dt=', num2str(d
xlabel('t'); ylabel('r')

% hver komponent:
E=[-1, -2, 5];
F = e.*E;
a = F./m_e;
% initalverdier
r = r0;
v = v0;
ra = r0;
n = t1/dt;
t=0;
c=0;
 for i=2:n
    v(i,:) = v(i-1,:) + a.*dt;
    r(i,:) = r(i-1,:) + v(i,:).*dt;
    c=c+dt;
    t(i,:)=c;
 end
% plot
figure()
```

```
plot(t(:,1),r(:,1),'g', t(:,1), r(:,2), 'r', t(:,1), r(:,3), 'b')
legend('x_t', 'y_t', 'z_t')
xlabel('t'); ylabel('r')
title('hver komponent tid posisjon')
figure()
plot3(r(:,1), r(:,2),r(:,3))
title('path'); grid();
xlabel('x_t'); ylabel('y_t'); zlabel('z_t')
end
```

```
n =

    10000
```




hver komponent tid posisjon
x_t
y_t
z_t
r
t
x 10^-5


path
z_t
y_t
x_t

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