Create an m-file called gravity.m with the following comments (preceded by a percent sign, %) and the following commands:

```matlab
% gravity.m
% plots the velocity and acceleration vs. time for uniform acceleration.

% Initial conditions:
% Initial height in m (upward is positive)
y0=0
% Initial velocity in m/sec (upward is positive)
v0=30
% Gravitational acceleration in m/sec^2 (upward is positive), using Meriam's value of g = 9.81 m/sec^2
a=-9.81

% Time interval:
% t0 is the start time in sec
t0=0
% delta_t is the time increment in sec
delta_t=0.01
% tf is the final (end) time in sec
tf=6.3
% t is the time matrix
t=[t0:delta_t:tf];

% Outputs
% v is the velocity in m/sec as a function of time t
v=v0+a*t;
plot(t,v)
title('Velocity vs. Time for y0=0 m and v0=30 m/sec')
ylabel('Velocity [m/sec]')
xlabel('Time [sec]')
grid on; figure(gcf); pause;
% y is the height in m as a function of time t
y=y0+v0*t+(1/2)*a*t.^2;
plot(t,y)
title('Height (Position) vs. Time for y0=0 m and v0=30 m/sec')
ylabel('Height [m]')
xlabel('Time [sec]')
grid on; figure(gcf);
```

Type “help subplot” at the command prompt (>>) to see how to put the two plots on one page.

Try changing the initial conditions to: y0=80, v0=30. Note, you will need to change the value of tf, and the title of the plots.