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function dz = bvp1(t,z)
dz =[ z(2)
      z(2)*2*t/(t^2+1)-z(1)*2/(t^2+1)+1
      z(4)
      z(4)*2*t/(t^2+1)-z(3)*2/(t^2+1)];

% Solving y''=2t/(t^2+1)*y'-2/(t^2+1)*y+1
%      y(0)=1.25  y(1)=-0.95,  t in [0,4]
% Linear shooting method.
clear;
ya=1.25; yb=-0.95;
z0=[ya; 0; 0; 1];
a=0; b=4;
[t,z] = ode45(@bvp1,[a,b], z0);
m=length(t);
c=(yb-z(m,1))/z(m,3);
y=z(:,1)+c*z(:,3);
plot(t,y,'ro',t,z(:,1),'-',t,z(:,3),'--');
grid
legend('y(t)', 'u(t)', 'v(t)');
title('Linear shooting method (MatLab solution)')

```

