```
% gda09_02
%
% example of transforming distributions
% supports Figure 9.1

clear all;

% model parameter, m
M=200;
mmin = 0;
mmax = 1;
Dm = (mmax-mmin)/(M-1);
m = mmin + Dm*[0:M-1]';

% uniform distribution
Pm = ones(M,1);

% transformation mp = m^2
mp=m;
Pmp = 0.5 ./ sqrt(mp);
Pmp(1)=0.0; % set singularity to zero

% check
Am = Dm*sum(Pm);
Amp = Dm*sum(Pmp);
fprintf('areas: %f %f\n', Am, Amp );
```

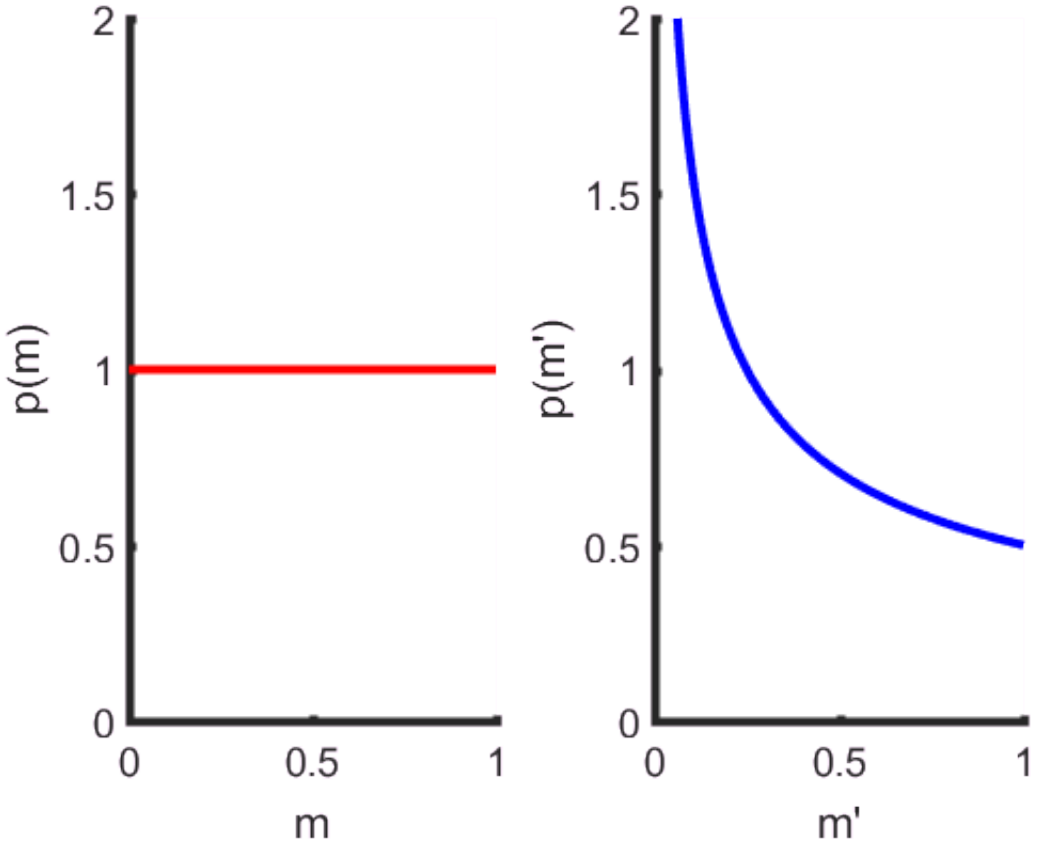
```
areas: 1.005025 0.949495
```

```

figure(1);
clf;

% plot p(m)
subplot(1,2,1);
set(gca,'LineWidth',3);
set(gca,'FontSize',14);
hold on;
axis( [mmin, mmax, 0, 2] );
plot( m, Pm, 'r-', 'LineWidth', 3 );
xlabel('m');
ylabel('p(m)');

% plot p(m') where m'=m^2
subplot(1,2,2);
set(gca,'LineWidth',3);
set(gca,'FontSize',14);
hold on;
axis( [mmin, mmax, 0, 2] );
plot( mp(2:M), Pmp(2:M), 'b-', 'LineWidth', 3 );
xlabel('m''');
ylabel('p(m'')');
```




```
% Figure 9.1 (A) A probability density function, p(m), that is uniform on the interval
% 0< m < 1. (B) The corresponding probability distribution, p(m′), for the transformation
% m′ = m2.
```