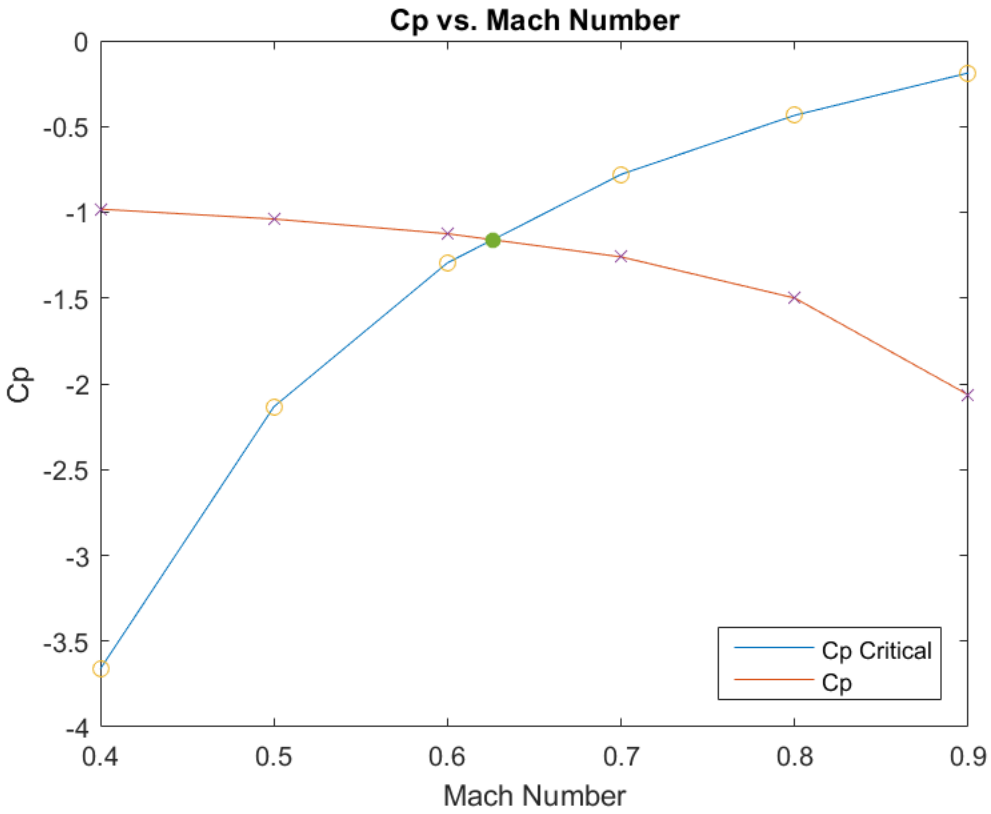
```
% Array of Mach number Values from 0.4 to 1.0 %
Mach = linspace(0.4,0.9,6);

% Set gamma value %
gamma = 1.4;

% Set minimum pressure coefficient %
Cp_0 = -0.90;

% Calculate critical pressure coefficient using Eqn. 5.48 (Anderson,
 8th Ed.
% Intro to Flight)
Cp_cr = Cp_critical(Mach, gamma)

% Calculate pressure coefficient using Eqn. 5.28 (Anderson, 8th Ed.
 Intro
% to Flighht)
Cp = Cp_calc(Mach, Cp_0)

% Generate curves to fit data %
p1 = polyfit(Mach,Cp_cr,5);
p2 = polyfit(Mach,Cp,5);

% Find intersection of the curves using "Fast and Robust Curve
% Intersections" by Douglas Schawrz from MATLAB Central File Exchange:
% http://www.mathworks.com/matlabcentral/fileexchange/11837-fast-and-
% robust-curve-intersections
[x_intersect, y_intersect] = intersections(Mach, Cp_cr, Mach, Cp)

% Plot data points, curves, and intersection %
y1 = polyval(p1,Mach);
y2 = polyval(p2,Mach);

figure
plot(Mach, y1, Mach, y2)
legend('Cp Critical','Cp', 'Location','southeast')
hold on
plot(Mach, Cp_cr,'o')
plot(Mach, Cp, 'x')
scatter(x_intersect, y_intersect, 'filled')
hold off

title('Cp vs. Mach Number');
xlabel('Mach Number');
ylabel('Cp');


Cp_cr =

   -3.6620   -2.1334   -1.2943   -0.7791   -0.4346   -0.1879
```

```
Cp =

   -0.9820   -1.0392   -1.1250   -1.2603   -1.5000   -2.0647

x_intersect =

    0.6260

y_intersect =

   -1.1602
```



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