

```

H = [0.26 0.42 0.65 0.95 1.60 2.80];
B = [0.20 0.40 0.60 0.80 1.00 1.20];
x = H;
y = B;
%
no_xy_pairs = length(x) % counts number of pairs
xy_pairs = [x' y'] % displays the pairs
x_1 = x(1);
x_n = x(no_xy_pairs);
pause
% -----
% Fitting data to polynomial order 1
% -----
P1 = polyfit(x,y,1);
xx1 = linspace(x_1,x_n);
yy1 = polyval(P1,xx1);
%
plot(x,y,'o',xx1,yy1)
title('Polynomial Curve Fitting')
xlabel('Velocity (m/s)')
ylabel('Force (N)')
legend('Expt Data','P_1(x)', ...
       'Location','NorthWest')
hold on
pause

% -----
% Fitting data to polynomial order 2
% -----
P2 = polyfit(x,y,2);
xx2 = linspace(x_1,x_n);
yy2 = polyval(P2,xx2);
%
plot(xx2,yy2)
legend('Expt Data','P_1(x)','P_2(x)', ...
       'Location','NorthWest')
hold on
pause

% -----
% Fitting data to polynomial order 3
% -----
P3 = polyfit(x,y,3);
xx3 = linspace(x_1,x_n);
yy3 = polyval(P3,xx3);
%
plot(xx3,yy3)
legend('Expt Data','P_1(x)','P_2(x)','P_3(x)', ...
       'Location','NorthWest')
hold on
pause

% -----
% Fitting data to polynomial order (n-1)
% -----
nm1 = (no_xy_pairs - 1);
Pnm1 = polyfit(x,y,nm1);
xxnm1 = linspace(x_1,x_n);
yynm1 = polyval(Pnm1,xxnm1);
%
plot(xxnm1,yynm1,'r')
legend('Expt Data','P1(x)','P2(x)','P3(x)', '\alpha^2 P_{n-1}(x)', ...
       'Location','NorthWest')
grid on
hold off

```