

```

% create dataset
clear all;
N = 200;
x = (rand(N,1))*10;

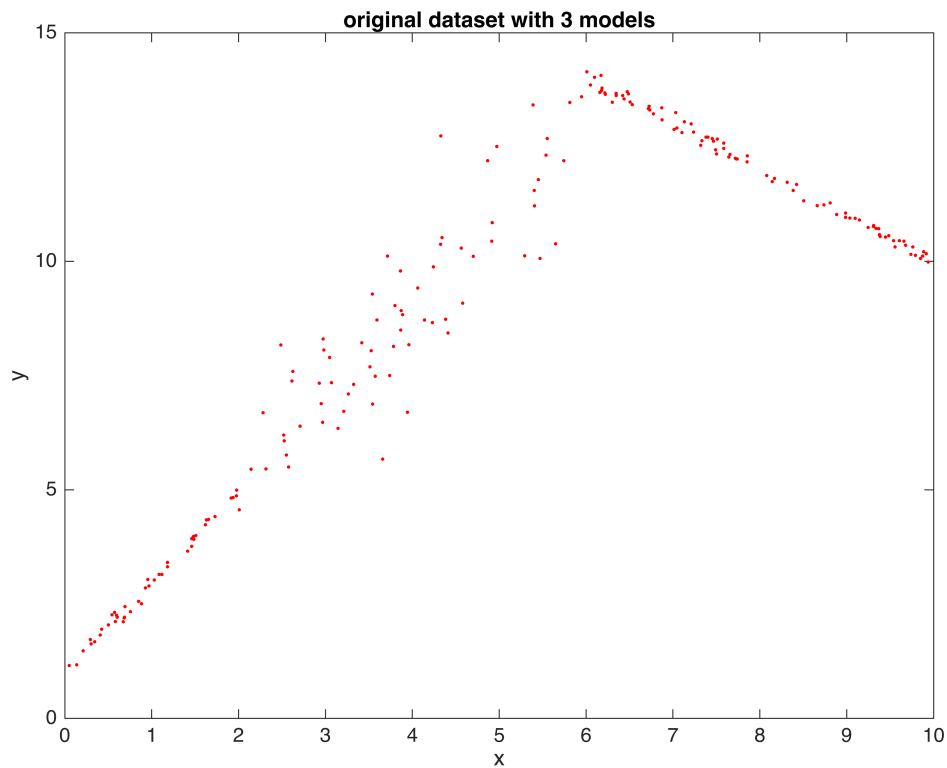
for i = 1:N

    if x(i) < 2
        y(i) = 2*x(i)+1 + normrnd(0,0.1,1);
    elseif x(i) < 6
        y(i) = 2*x(i)+1 + normrnd(0,1.0,1);
    else
        y(i) = -x(i)+20 + normrnd(0,0.1,1);
    end
end

y = y';
figure; plot(x,y,'r. ');

xlabel('x'); ylabel('y'); title('original dataset with 3 models')

```



```

% fit local linear models

```

```

for i=1:N

    xx = x(i);
    check = sqrt((x-xx).*(x-xx)) < 1;

    localxdata = x(check);
    localydata = y(check);

    X=[localxdata ones(size(localxdata))];
    wlocal = X\localydata;

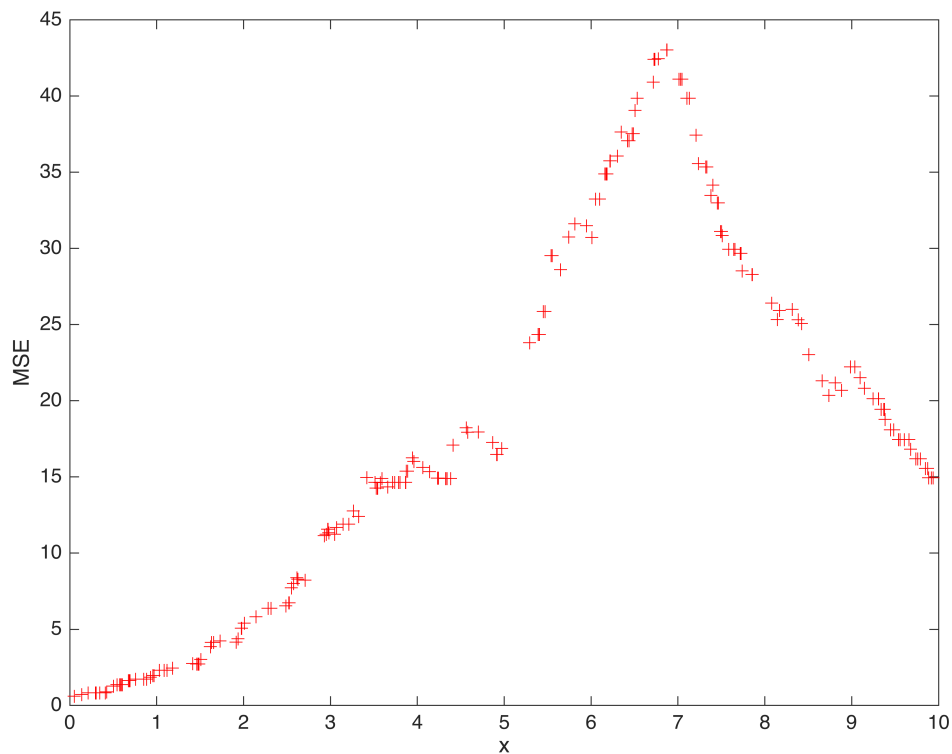
    w1(i) = wlocal(1);
    w2(i) = wlocal(2);
    w{i} = wlocal;
    MSE{i} = (1/N)*(X*wlocal)'*(X*wlocal);
end

```

```

figure;
plot(x,cell2mat(MSE),'r+'); xlabel('x'); ylabel('MSE');

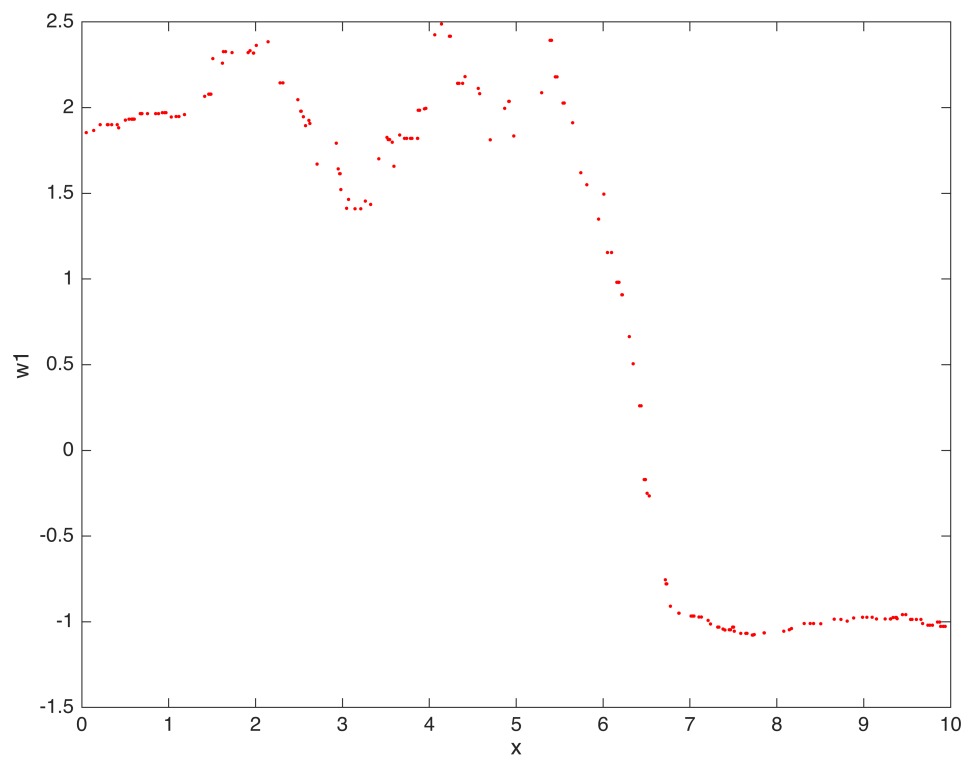
```



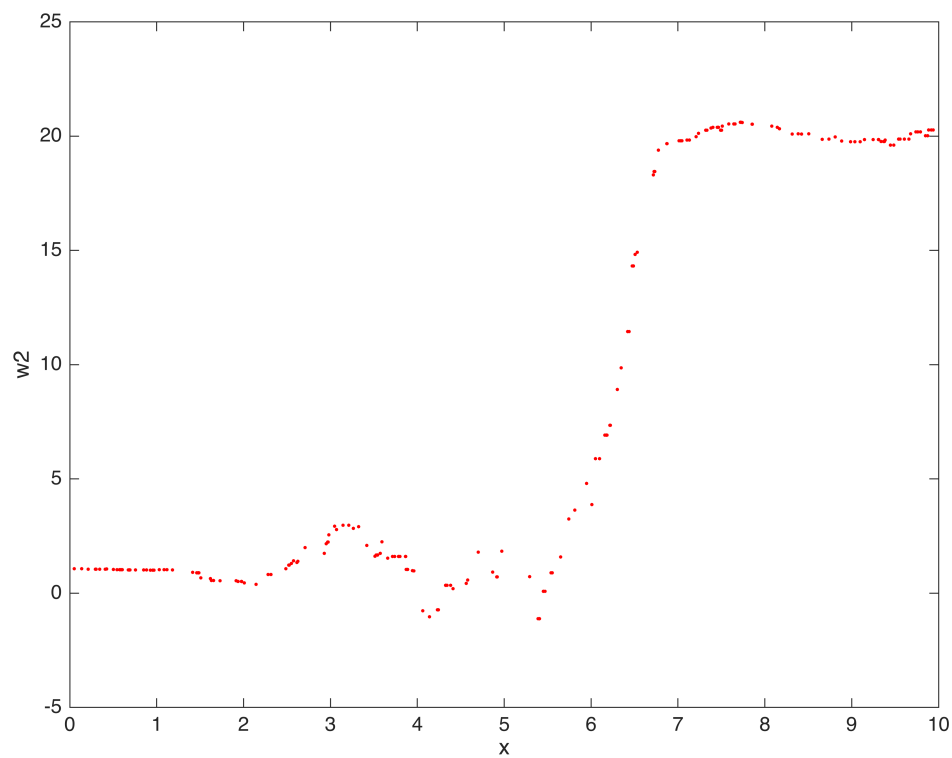
```

figure;
plot(x,w1,'r. '); xlabel('x'); ylabel('w1');

```



```
figure;  
plot(x,w2,'r. '); xlabel('x'); ylabel('w2');
```



```
% create distance matrix
```

```
for i = 1:N
    for j = 1:N

        D(i,j) = 5.0*(w{i}-w{j})'*(w{i}-w{j});
        D2(i,j) = D(i,j) + 1.0*(MSE{i}-MSE{j})'*(MSE{i}-MSE{j});
        D3(i,j) = D2(i,j) + 0.0*(x(i)-x(j))'*(x(i)-x(j));

    end
end
```

```
% cluster
```

```
[idx,c] = kmedoids(D3,4,'Replicates',100);
figure; gscatter(x,y,idx);
```

