Problem Sheet 8 - Matlab

Here you may find sample inputs for each of the MATLAB problems in the sheet, and the corresponding values your codes should return.

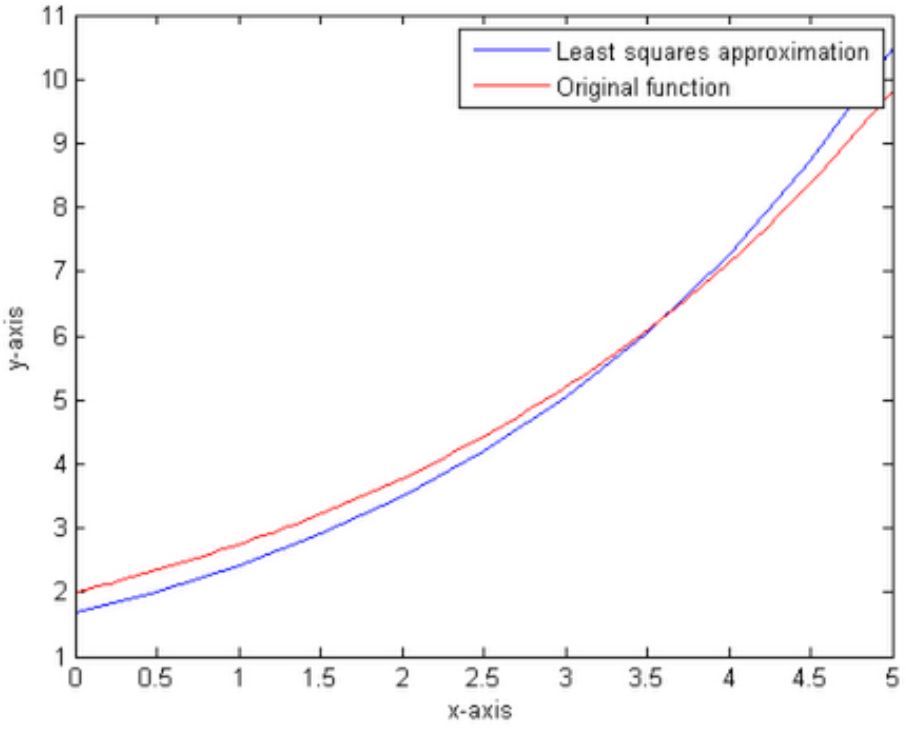
Contents

Problem 2 c)

We have also plotted our approximation against the underlying function.

```
t = linspace(0, 5, 11)';
y = [1.367194; 2.860464; 3.335026; 1.927943; 3.044533; 3.604435; 5.700474;
    7.126732; 6.678201; 9.218993; 10.348702];
[a b] = ExpoFuncFit(t, y);
fprintf('a = %f\n', a);
fprintf('b = %f', b);
% Plotting
plot(t, a*exp(b*t)), hold on;
fplot('2*exp(x/pi)', [0 5],'r');
legend('Least squares approximation', 'Original function');
xlabel('x-axis'); ylabel('y-axis');
```

```
a = 1.681753
b = 0.365941
```



Problem 4 e)

The entries of the output array p are the distances of points p_2, p_3, p_4, p_5 from the first point, p_1, which is in accordance with the modification of the problem (ensuring the uniqueness of the least squares solution)

```
D = [0  0  0  0 0;
    11  0  0  0 0;
    23 13  0  0 0;
    43 31 17  0 0;
    61 47 37 19 0];
p = RoadLengths(D); disp(p)
```

```
   11.6000
   24.0000
   42.0000
   60.4000
```

Problem 6 c)

```
x = [1.24285; 4.917424; 3.269062; 7.7655; 2.188662; 6.287498; 5.091113];
y = [12.079910; 22.840573; 31.230056; 33.253588; 30.21888; 31.440825; 26.454595];
[beta alpha] = CrosstalkChannel(x, y);
fprintf('alpha = %f\n', alpha);
fprintf('beta = %f', beta);
```

```
alpha = 3.107936
beta = 1.664240
```

Published with MATLAB® 7.13