Assignment-3

1.) Given,

G => Gain

v => internal voltage

$$d = Gv$$

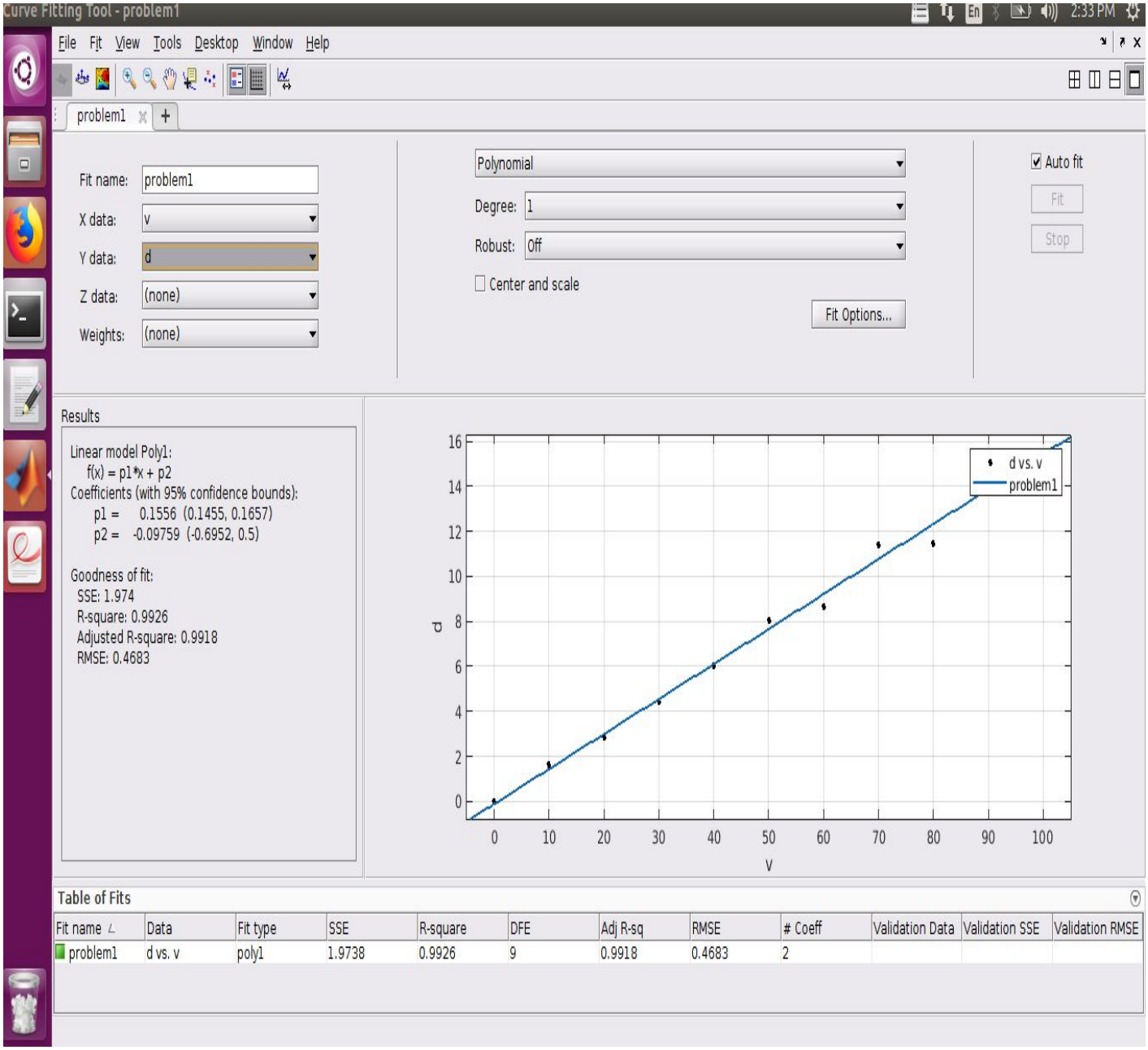
Please find the matlab code to find

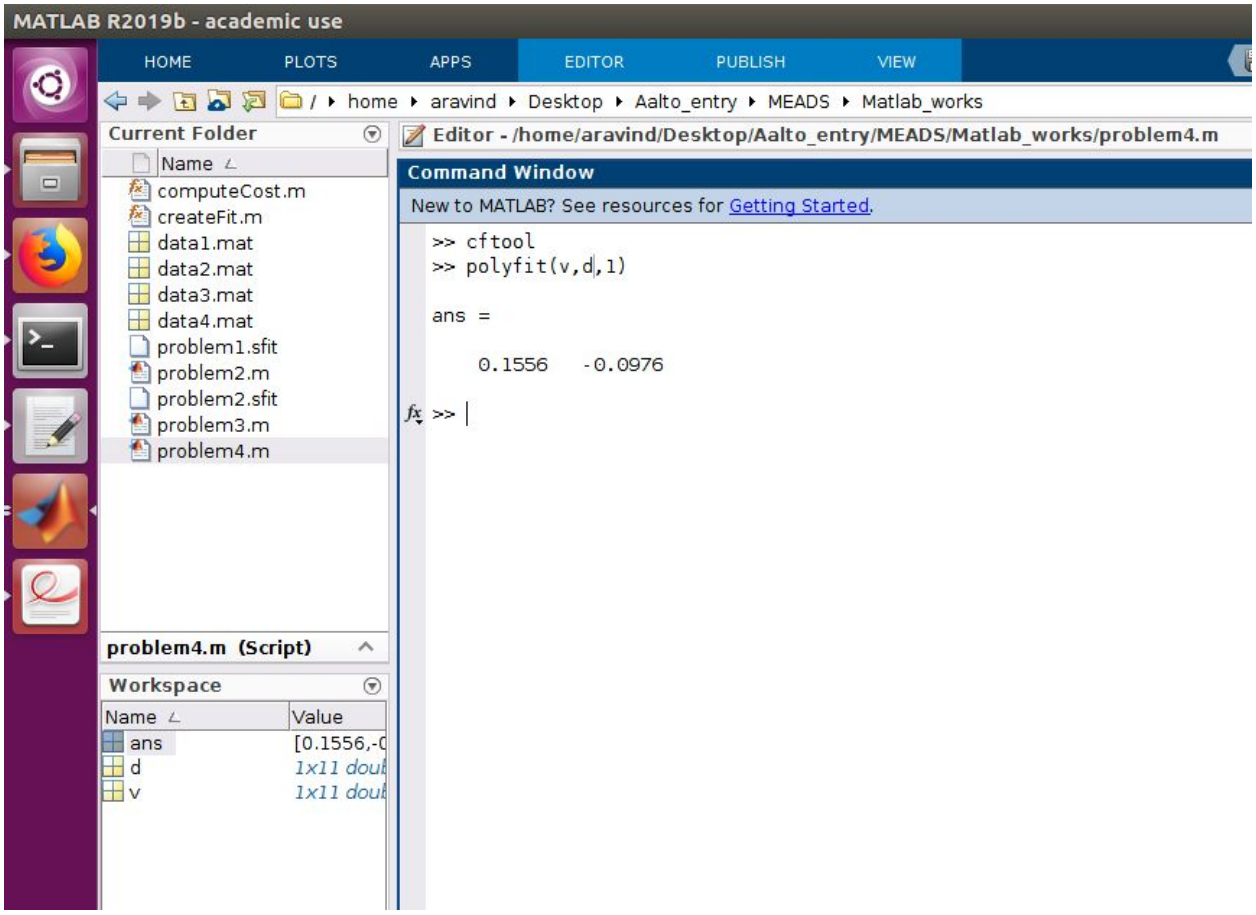
a:

The value of $x = 75$ can be calculated using polyval.

please find the pdf's for value when $V = 75$

$$d = 11.5731$$


Curve Fitting Tool - problem1
File Fit View Tools Desktop Window Help
problem1
Fit name: problem1
X data: v
Y data: d
Z data: (none)
Weights: (none)
Polynomial
Degree: 1
Robust: Off
Center and scale
Fit Options...
Auto fit
Fit
Stop
Results
Linear model Poly1:
f(x) = p1*x + p2
Coefficients (with 95% confidence bounds):
p1 = 0.1556 (0.1455, 0.1657)
p2 = -0.09759 (-0.6952, 0.5)
Goodness of fit:
SSE: 1.974
R-square: 0.9926
Adjusted R-square: 0.9918
RMSE: 0.4683
d vs. v
problem1
d
v
Table of Fits
Fit name | Data | Fit type | SSE | R-square | DFE | Adj R-sq | RMSE | # Coeff | Validation Data | Validation SSE | Validation RMSE
problem1 | d vs. v | poly1 | 1.9738 | 0.9926 | 9 | 0.9918 | 0.4683 | 2


MATLAB R2019b - academic use
HOME
PLOTS
APPS
EDITOR
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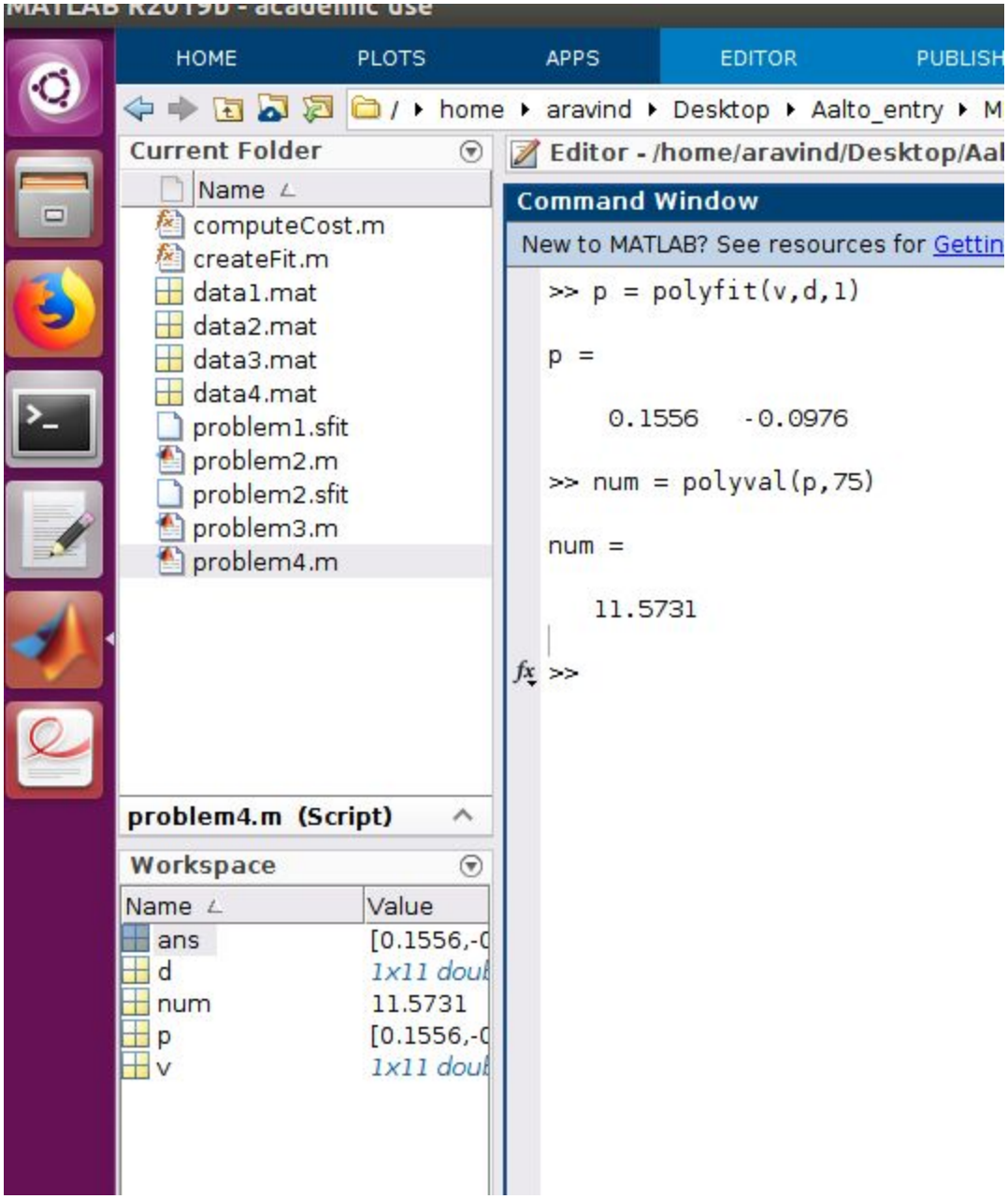
VIEW
/ ▸ home ▸ aravind ▸ Desktop ▸ Aalto_entry ▸ MEADS ▸ Matlab_works
Current Folder
Name
computeCost.m
createFit.m
data1.mat
data2.mat
data3.mat
data4.mat
problem1.sfit
problem2.m
problem2.sfit
problem3.m
problem4.m
problem4.m (Script)
Workspace
Name
Value
ans
[0.1556,-0
d
1x11 doub
v
1x11 doub
Editor - /home/aravind/Desktop/Aalto_entry/MEADS/Matlab_works/problem4.m
Command Window
New to MATLAB? See resources for Getting Started.
>> cftool
>> polyfit(v,d,1)
ans =
0.1556 -0.0976
>>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Current Folder
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data1.mat
data2.mat
data3.mat
data4.mat
problem1.sfit
problem2.m
problem2.sfit
problem3.m
problem4.m
problem4.m (Script)
Workspace
Name
Value
ans
[0.1556,-0
d
1x11 doub
num
11.5731
p
[0.1556,-0
v
1x11 doub
Editor - /home/aravind/Desktop/Aal
Command Window
New to MATLAB? See resources for Gettin
>> p = polyfit(v,d,1)
p =
0.1556 -0.0976
>> num = polyval(p,75)
num =
11.5731
>>

2.) Please find the matlab codes.
All solutions in matlab

3.) $y = k_1 x^{k_2}$

Take log

$\log y = \log k_1 + k_2 \log x$ — (1)

Now

$Y = \log y$

$A = \log k_1$

$B = k_2$.

$X = \log x$.

So (1) becomes

$$\boxed{Y = A + BX}$$

Also, find matlab codes for other solutions.

$\boxed{k_1 = e^A}$ $\boxed{k_2 = B}$

3.c :-

The best polynomial degree is 1
Because, it has minimum SSE

4.) Find the matlab codes.