



University of Technology
Department of Applied Sciences
Final Examination
2016 -2015



Subject : Programing (Matlab)

Branch :Appl-Math

Examiner: A.M Shukur

Class : third class

Time : 3 hours

Date : / 5 /2016

Note: Answer only five questions, (10 mark for each one)

Q1)write M-file to calculate integration of $f(x)$ from x_0 =value to x_1 =value? where, one can use keyboard to enter (x_0, x_1 and $f(x)$), then, the M-file returns the value for the integration on C.W also the figure of this integration.

Q2) write M-file to find the two roots of standard quadratic equation in all cases ?

Q3)write M-file to find best polynomial which is fitting data (x_i, y_i); $i=1:N$? also, draw (in the two figures) exact data as a red point and fitting data as a green curve? Enter the data by using keyboard when you read " please enter your data "?

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|---|--|----------------------------------|--|--|
| Q4) Write the result (value of B) in the following groups of commands? | | | | |
| <pre>>> A=[1 2 3;... 4 5 6; 7 8 9]; >> B = A'</pre> | <pre>>> X=[1:3; 5:-1:3]; >> B = X.^2</pre> | <pre>>> B = X(:, 2)'</pre> | <pre>>> A=ones(3)*2; >> C=[1 2 3 4 5 6; 7 8 9]; >> B=A.* C</pre> | <pre>>>a=linspace(2,2,3); b=ones(3,1)*2; c=(b/2)*(diag(2)); A= [a'; b ; c]; >>B=3.^A</pre> |

Q5)Write Matlab-commands that equivalent to the following math-Expressions:

a-) $\int_a^b e^{\sqrt{x}} \sin(\pi x) dx$; b-) find $f(3)$? where $f(x) = \ln(x) \cos(x^2)$

c-) find $\frac{d^2}{dx^2} f(x)$? where $f(x) = ax^3 + e^{bx}$.

d-) find solution of $(\frac{d^3}{dx^3} u = u)$? where $(u''(0) = \pi; u'(0) = -1; u(0) = 1)$.

e-) find value of a, u and v ? where $(u^2 - v^2 = a^2 ; u + v = 1; a^2 - 2a = 3)$

Q6)Write a program that calculates the factorial of a positive integer, factorial of zero is one. If the user entered a negative number, the program should print an error message and ask the user to reenter the number. After displaying the result, the program should ask the user if he wishes to calculate the factorial of another number or he wants to terminate the program?

Good luck