

حسابات علمية

إمتحان العملى

كلية الحاسبات والمعلومات

الزمن ٤٥ دقيقة

ديسمبر ٢٠١٣

الفرقة الثالثة

C

اسم الطالب:

Answer the following three questions:

(Total Marks 20)

1) Write down the necessary MATLAB commands to perform the following:

a) (2 marks) Simplify $\frac{(x^{10} - y^{10})}{(x - y)}$.

b) Given $\mathbf{A} = \begin{pmatrix} 15 & -5 & 23 \\ -1 & -11 & -65 \end{pmatrix}$ and $\mathbf{B} = \begin{pmatrix} 1 & 4 \\ 15 & 6 \\ 7 & 9 \end{pmatrix}$, compute the

following:

i. (2 marks) \mathbf{AA}^t , \mathbf{AB} , $\mathbf{A} + \mathbf{B}^t$.

ii. (2 marks) $\sin(5\mathbf{A})$, $\ln|\mathbf{A}|$.

2) (7 marks) Given the table below, write a MATLAB program for approximating $y(0.3)$ using Lagrange interpolation.

X	0.0	0.2	0.4	0.6	0.8
Y	1.000	1.22140	1.49182	1.82212	2.22554

3) Perform the following using the Fixed-Point Iteration Method:

a) (3 marks) Write a MATLAB program for approximating the solution to $x = 2e^{-x}$ for $x_0 = 0.5$ to within 10^{-5} .

b) (2 marks) Compute the exact solution using MATLAB.

c) (2 marks) Compute the actual error.

Best Wishes