



**SUBJECT: AMAT 314
ASSIGNMENT 1**

**SPRING 2009
DUE DATE: 30/4/2009**

LECTURERS: Dr. Marios Charalambides and Dr Panagiota Konstantinou.

Student's Name:	Total Marks: 100	Your Marks:
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INSTRUCTIONS TO CANDIDATES

- ◆ Answer **ALL** questions to receive full credit.
- ◆ All necessary work must be shown.
- ◆ You are reminded of the necessity for good English and orderly presentation in your answers.
- ◆ Print your codes and attach them to this paper together with your answers to the questions.

QUESTION 1:

- a) Write a program in MATLAB that uses the False Position Method to approximate the root of the equation $f(x) = x^2 - 2 = 0$ with tolerance $\varepsilon = 0.00001$.
- b) In class we discussed a program that used the Bisection Method to approximate the root of the above function. Compare the two methods.

QUESTION 2:

- a) In class we discussed a program that used the Newton Raphson Method to approximate the root of the equation $f(x) = x^2 - 2 = 0$ with an initial estimate $x_1 = 1$. Run the program in order to compare our results with the results obtained with the two methods from question 1.
- b) Write a program in MATLAB that uses the Newton Raphson Method to approximate the root of the equation $f(x) = x^3 + 4x^2 - 10 = 0$ with an initial estimate $x_1 = 1$ and tolerance $\varepsilon = 0.000001$.