MS4024 MATLAB

April 26, 2013

MATLAB Laboratory Exam 2013

Sample Paper 1 (Version April 24th 2013)
Answer all of the following questions:

1. Compute the sum of all two-digit prime numbers
2. Compute the sum of the squares of all prime numbers less than 100.
3. Specifying which approach you have used, evaluate the following

$$\mathrm{Log}_{10}(432)$$

4. How many three-digit prime numbers are there?
5. Compute the mean, median and standard deviation of the set of three digit numbers. (For this exercise, you may treat the set of numbers as a randomly selected sample).
6. What are the unique factors of the number 719423423?

7. Let A =

$$\begin{matrix} 16 & 2 & 3 & 13 \\ 5 & 11 & 10 & 8 \\ 9 & 7 & 6 & 12 \\ 4 & 14 & 15 & 1 \end{matrix}$$

   Write down an expression that results in the matrix B

$$\begin{matrix} 16 & 3 \\ 5 & 10 \\ 9 & 6 \\ 4 & 15 \end{matrix}$$

8. Determine the determinant of the following matrix A

9. Determine the inverse of the matrix A, as descibred in the previous question.

10. Determine the eigenvalues of the matrix A, as descibred in the previous question.

11. Express the following complex number in terms of the polar co-ordinates $5 - 3j$

12. Briefly explain the purpose of the MATLAB command `erf()`

13. Simplify the following expression

$$(x - \pi)^2 \times (x + 3) \times (x - 1) + (x - 3)^2$$

14. Determine the polynomial roots of the following expression

$$x^5 + 2x^4 + 3X^3 + x^2 + 14$$