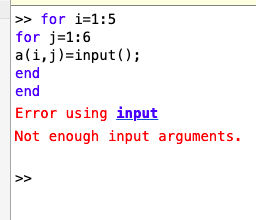
**CSU33081 Assignment 3**

**Davy O’Leary-Fraad 19334296**

**Q1.** Rearranging this equation we can obtain :

If we substitute the matrix information into this formula, we can clearly see that none of the given answers represents the square root of matrix B divided by matrix A and therefore the answer is E, none of these.



**Q2.**

After inputting the code into MATLAB, we can see from the above screen grab that an error message is displayed in response.

Therefore the answer to this question is B.

**Q3.** In order to plot several functions in the same graph, we must pass multiple inputs of pairs of matrices to represent each plot.

Therefore the answer is E, none of these.

**Q4.** For this question:

Using the Newtonian method for interpolation with the following formulas :

Now evaluating for X=1.5 :

As the solution does not match any of A-D, the answer for this question is E, none of these.

**Q5.**

**Q6.** For this question:

Using the Newtonian method for interpolation with the following formulas :

Substituting my values in gives the interpolating polynomial to be differentiated :

Differentiating gives us :

When T=18s :

Therefore, the answer is E, none of these.

**Q7.** We can see that it is not possible to use the central difference formula to approximate in this question as we can use only and . Therefore we must use either the forward difference or backward difference formula. For the purpose of this question, I believe it is more logical to use the backward difference formula.

Next we substitute :

Next we can use Taylor’s Theorem to expand to yield :

This can be simplified to :

Therefore, the truncation error is O(h) , and the answer is A.