Sri Lanka Institute of Information Technology
Discrete Mathematics
LabSheet 06
Year 2 , Semester 2

Revision Lab Session 01

1. Calculate the following equations using Octave :

$(a)\ \left(5-\frac{19}{7}+2.5^3\right)^2$ $(b)\ 7\times 3.1+\frac{\sqrt{120}}{5}-15^{5/3}$

2. Define the variables x and y as x = 6.5 and y = 3.8, then evaluate:

$(a)\ \left(x^2+y^2\right)^{2/3}+\frac{xy}{y-x}$ $(b)\ \frac{\sqrt{x+y}}{(x-y)^2}+2x^2-xy^2$

3. Evaluate the following expressions using Octave:

$(a)\ 6\times 4>32-3$ $(b)\ v=4\times 3-7<15/3>-1$

$(c)\ y=2\times(3<8/4+2)^2<(-2)$ $(d)\ (5+\sim 0)/3==3-\sim(10/5-2)$

4. Given: $d = 6$, $e = 4$, $f = -2$ Evaluate the following expressions using Octave :

$(a)\ y=d+f>=e>d-e$ $(b)\ y=e>d>f$

$(c)\ y=e-d<=d-e==f/f$ $(d)\ y=(d/e*f<f)>-1*(e-d)/f$

5. Given: v = [–2 4 1 0 2 1 2] and w = [2 5 0 1 2 –1 3]. Evaluate the following expressions with using Octave.

$(a)\ \sim v==\sim w$ $(b)\ w>=v$

$(c)\ v>\sim -1*w$ $(d)\ v>-1*w$

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6. Write a program in octave to find the roots of the following equations (Use "roots" function)

(a) $x^2 - 5x + 6 = 0$ (b) $2x^2 - 5x + 7 = 0$

7. Write a function in Octave to get the user input and calculate whether the number is even or odd? Hint - (Use If else Statement)

8. Write a function to calculate the Fibonacci sequence when the range for the sequence is given as user inputs. (Hint – try this question in both for and While loops)

9. Use loops to create a 4x6 matrix in which the value of each element is two times its row number minus three times its column number. For example,

The value of element (2,5) is 2*2 - 3*5 = -11

10. Create a row vectors A=4:3:13 and a column vector B=[14:-2:6]'.Then only using the name of the vectors ("A" and "B"), create the following:

(a) A row vector "C" that is made from the elements of "B" followed by the elements of "A".
(b) A column vector "D" that is made from the elements of A followed by the elements of "B".

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11. Create a row vector vA=1:3:34 that has 12 elements. Then, create a new nine-element vector "vB" from the elements of vA such that the first five elements are the first five elements of the vector "vA", and the last four are the last four elements of the vector "vA". Use the colon symbol to address a range of elements. (Do not type the elements of the vector "vA" explicitly.)

12. Create the following matrix "M"

```
M =
   1     7    13    19    25
   3     9    15    21    27
   5    11    17    23    29
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By writing one command and using the colon to address range of elements (do not type individual elements explicitly), use the matrix "M" to:

(a) Create a five-element row vector named "Va" that contains the elements of the third row of "M".
(b) Create a three-element column vector named "Vb" that contains the elements of the fourth column of "M".
(c) Create an eight-element row vector named "Vc" that contains the elements of the second row of "M" followed by the elements of the third column of "M".