University of Ruhuna
Department of Mathematics

Bachelor of Science (General) Degree (Level II)

Industrial Mathematics

IMT 2b2β: Mathematical Computing

Assignment No: 03 **Semester I, 2012**

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1. Define following sets in Maxima.

$S_1 = \{S, A, N, A, N, T, O, N, I, O\}$
$S_2 = \{S, A, N\}$
$S_3 = \{A, N, T, O, N, I, O\}$
$S_4 = \{\}$

(i) Add element C to set S_1.

(ii) Find the number of distinct elements of set S_1.

(iii) Remove the element I from set S_1.

(iv) Find $S_1 \cap S_2$.

(v) Find $S_1 \cap S_2 \cap S_3$.

(vi) Find $S_1 \cup S_2$.

(vii) Find $S_1 \cup S_2 \cup S_3$.

(viii) Are S_1 and S_2 disjoint?

(ix) Is I an element of set S_1?

(x) Is set S_4 empty?

(xi) Find set of all subsets of set S_3.

(xii) Add set {a,b,c} as an element to the set S_1.

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2. Define following sets in Maxima.

$S_1 = \{a, b, c, d, e, f, g, h, I, j, k, l\}$
$S_2 = \{a, e, I\}$
$S_3 = \{b, c, d, e, f\}$
$S_4 = \{d, e, f, g, h, I, j\}$
$S_5 = \{\}$

(i) Add element l to set S_1.

(ii) Find the number of distinct elements of set S_1.

(iii) Remove the element a from set S_1.

(iv) Find $S_1 \cap S_2$.

(v) Find $S_1 \cap S_2 \cap S_3 \cap S_4 \cap S_5$.

(vi) Find $S_1 \cup S_2$.

(vii) Find $S_1 \cup S_2 \cup S_3 \cup S_4 \cup S_5$.

(viii) Are S_3 and S_4 disjoint?

(ix) Is z an element of set S_1?

(x) Is set S_3 empty?

(xi) Find set of all subsets of set S_1.

(xii) Add set S_2 as an element to the set S_1.

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3. (i) Define a list in Maxima with elements $a, b, c, d, e, f, g, h, I, j, k, l$.

(ii) Assign the list to a variable l.

(iii) Find the length of l

(iv) Access the first element of l.

(v) Access the second element of l.

(vi) Access the last element of l.

(vii) Remove first element of l and assign new list to l_1.

(viii) Remove first 3 elements of l and assign new list to l_2.

(ix) Append elements u and v to l and assign new list to l_3.

(x) Remove the element a from original list l.

(xi) Add set $\{1, 2, 3\}$ as an element to the list l_3.

(xii) Convert list l to a set and assign it to variable s.

(xiii) Is a an element of set s?

(xiv) Is set s empty?

(xv) Find set of all subsets of set s.

(xvi) Find the number of distinct elements of set s.

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4. Define a list with following names.

Eachan,Eamnonn,Eamon,Wade,Wagner,Wahib,Wahnond,Wain,Xan,
Xanthus,Xan,Cadman,Cadmus,Cadogan,Caedmon

(i) Assign the list to a variable t.

(ii) Access the first name of t.

(iii) Access the second name of t.

(iv) Access the last name of t.

(v) Add names "Vail", "Vairaja" and "Laertes" to t.

(vi) Remove name "Wade" from t.

(vii) Sort names in the list in alphabetical order.

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