University of Ruhuna
Department of Mathematics

Bachelor of Science (General) Degree (Level II)

Industrial Mathematics

IMT 2b2β: Mathematical Computing

Assignment No: 01 **Semester I, 2012**

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1. (i) Get all details about routine **solve**.

(ii) Get a list of all Maxima names that contain the substring **solve**.

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2. (i) Compute the first 500 digits of π.

(ii) Reset the precision of big float arithmetic.

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3. (i) Store the so-called golden ration, $\frac{1}{2}(1+\sqrt{5})$, in variable **gr**.

(ii) Compute its numerical value.

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4. (i) Define a function **heron(a,b,c)** that computes the area of a triangle with sides **a**, **b**, and **c** by means of Herons formula

$$\text{Area} = \frac{1}{4}\sqrt{(a^2+b^2+c^2)^2 - 2(a^4+b^4+c^4)}.$$

(ii) Define function **ln** that computes the natural logarithm.

(iii) List all your variables and functions.

(iv) Remove all your variable and function definitions.

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5. Find the numerical values of the followings:

(i) $\frac{1}{23} + \frac{3}{43} - 78$

(ii) $3^7 + \sqrt{37} + \frac{7}{13}$

(iii) $e^7 + \cos \pi/3 - \sin \pi/8$

(iv) $\log_2 5 + \log_3 7 + \log_5 9$

(v) $\sqrt{5} + \log_4 5 + \frac{1}{13}$

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6. Let $a = 4 + 7i$ and $b = 6 - 4i$, find

(i) $a + b$

(ii) $a - b$

(iii) $a \times b$

(iv) Absolute value of a

(v) Cojugate of a

(vi) Imaginary part of a

(vii) Real part of a

(viii) Polar from of a

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