University of Ruhuna
Department of Mathematics

Bachelor of Science (General) Degree (Level II)

Industrial Mathematics

IMT 2b2β: Mathematical Computing

Assignment No: 06 **Semester I, 2012**

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1. Solve following linear equations for x.

(i) $x - 4 = 10$

(ii) $2x - 4 = 10$

(iii) $5x - 6 = 3x - 8$

(iv) $2(3x - 7) + 4(3x + 2) = 6(5x + 9) + 3$

(v) $\sqrt{2}x - \sqrt{3} = \sqrt{5}$

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2. Solve following equations for x.

(i) $\sqrt{x - 8} = 3$

(ii) $\sqrt{x - 10} - 4 = 0$

(iii) $\sqrt{x + 1} - 3x = 1$

(iv) $\sqrt[3]{x - 8} = 3$

(v) $\sqrt[5]{x - 10} - 4 = 0$

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3. Solve following quadradic equations for x.

(i) $x^2 - 5x + 3 = 0$

(ii) $-x^2 + 6x - 8 = 3x + 7$

(iii) $2x^2 - x - 1 = 0$

(iv) $\frac{1}{2}x^2 - 16x = 5$

(v) $\sqrt{3}x^2 + \sqrt{5}x = 12$

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4. Solve following equations for x.

(i) $\dfrac{1}{(x - 3)} + \dfrac{1}{(x + 3)} = \dfrac{10}{(x^2 - 9)}$

(ii) $\dfrac{2x-1}{x+1} = \dfrac{3}{(x+2)} - \dfrac{6x}{(x^2-4)}$

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5. Solve following equations for x.

(i) $e^x = 72$

(ii) $e^x + 5 = 60$

(iii) $4e^(2 * x) = 5$

(iv) $e^{2x} - 3e^x + 2 = 0$

(v) $100^{x^2-6*x+1} + 5 = 10$

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6. Solve following equations for x.

(i) $\ln x = 3$

(ii) $2 \ln 3x = 4$

(iii) $\ln(x^2 - 6x - 16) = 5$

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7. Solve the following systems of equations:

(i)

$$\begin{aligned} 2x_1 + 2x_2 + x_3 + 3x_4 &= 10 \\ 3x_1 + 5x_2 + 2x_3x_4 &= 30 \\ x_1 + 2x_2 + x_3x_4 &= 12 \end{aligned}$$

(ii)

$$\begin{aligned} 2x_1 + 10x_2 + 4x_3 + 9x_4 &= 1 \\ x_1 + 6x_2 + 5x_3 + 3x_4 &= 1 \\ 3x_1 + 16x_2 + 9x_3 + 11x_4 &= -1 \\ x_1 + 5x_2 + 2x_3 + 5x_4 &= 2 \\ x_2 + 3x_3 &= 4 \end{aligned}$$

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