



Uva Wellassa University
Faculty of Management

Degree of Bachelor of Business Management in Entrepreneurship and Management
1st YEAR 2nd SEMESTER EXAMINATION (REPEAT) – AUGUST-SEPTEMBER 2013

EMG-243-2 / 241-2 Business Mathematics

Instructions to candidates:

No. of pages : Two (02)
No. of questions : 5 questions
Time allocation : 2 hours
Marks allocation : 40%
Answer **only 4** questions

Index No:

1.

a. Consider the matrix $A = \begin{pmatrix} 5 & 1 & 2 \\ 3 & 4 & 6 \\ 1 & 0 & 2 \end{pmatrix}$ Find A^{-1} .

[5 Marks]

b. Using above result or other method solve the following system of linear equations.

$$5x_1 + x_2 + 2x_3 = 8$$

$$3x_1 + 4x_2 + 6x_3 = 13$$

$$x_1 - 2x_3 = -1$$

[5 Marks]

2. a. Find the domain and the range of,

i. $f(x) = \frac{1}{x-2}$

ii. $f(x) = \sqrt{x^2 - 4}$

[5 Marks]

b. Let $f: \mathbb{R} \setminus \{x \in \mathbb{R} | x < -2\} \rightarrow \mathbb{R}$, where $f(x) = \sqrt{x+2}$ and

$g: \mathbb{R} \setminus \{x \in \mathbb{R} | x < 2\} \rightarrow \mathbb{R}$, where $g(x) = \sqrt{x-2}$. Find the following, and in each case determine the domain.

i. $(f+g)(x)$

ii. $(f-g)(x)$

[5 Marks]

3. a.

Let the Cost of production, C depend on the number of units produced x , according to the equation $C = 0.001x^3 - 10x + 128$. Find the production level which minimizes the Average Cost,

$$AC = \frac{C}{x} = 0.001x^2 - 10 + \frac{128}{x}$$

[5 Marks]

b. Find the derivative of the following functions.

i. $f(x) = (x)^{5/2}$

ii. $f(x) = x^2 - 6$.

iii. $f(x) = \frac{(x-3)}{(x^2+1)}$

[5 Marks]

4.

a. Analyze the function $f(x) = 2x^3 - 4x^2$ (Draw the function using critical points)

[5 Marks]

b. Find the integral of the following functions

i. $\int \frac{1}{e^{-x}+1} dx$

ii. $\int 3x^2\sqrt{x^3+1} dx$

[5 Marks]

5.

a. Find the present value of \$5000 to be paid at the end of three years at 6% per year payable in advance and convertible semiannually.

[5 Marks]

b. Calculate the future value of an annuity immediate of amount \$400 paid annually for 8 years at the rate of interest of 6%.

[5 Marks]