

EASTERN UNIVERSITY, SRI LANKA
FIRST YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE - 2009/2010

(MAY/JUNE 2011)

AEN 1103 - BASIC MATHEMATICS (1:15/00)
(Old syllabus)



Answer all questions
Time: One hour

1. (a) Find the equation of the lines passing through the point (1, 2), which are (i) parallel (ii) perpendicular to the line $5x - 6y + 8 = 0$.
- (b) Find the distance between the following two points:
i) (0, 5) and (2, -5) ii) (-1, -3) and (-3, 2).
- (c) Find the equation of the tangent at (1, -3) to the circle $x^2 - y^2 = 10$.
- (d) Multiply the following matrices A and B:

$$A = \begin{pmatrix} 2 & -3 & 0 & 9 \\ -1 & 8 & 11 & 3 \\ 4 & 2 & -5 & 8 \end{pmatrix} \quad B = \begin{pmatrix} -1 & 12 & -4 \\ -5 & 4 & 6 \\ 3 & 5 & 9 \end{pmatrix}$$

2. (a) Evaluate the following limits of functions:

i. $\lim_{x \rightarrow 3} \frac{27 - x^3}{x^2 - 3x}$;

ii. $\lim_{x \rightarrow 3} \frac{x^2 - 9}{x^2 - x - 6}$;

iii. $\lim_{x \rightarrow 0} \frac{5 - (1 - x)^{1/2}}{x}$.

- (b) Differentiate the following functions with respect to the variable x:

i. $y = x^7(8x^5 + 4)$;

ii. $y = (4x^3 - 2x + 1)/(3 - 5x^2)$;

iii. $y = (x^3 + 3x)^6/(x^2 + 3x^2 + 4)^4$.

(P.T.O)

b. Integrate the following functions with respect to x :

i. $(4x + 3)(2x - 1)$;

ii. $x^5/(x^6 + 2)$.
