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EASTERN UNIVERSITY, SRI LANKA

FIRST YEAR FIRST SEMESTER EXAMINATION IN AGRICULTURE- 2002/2003

BASIC MATHEMATICS (MAT 1102)

Answer All Questions

Time: 01 hour

- 1
- a) Find the equation of the straight line which passes through (-3,1) and is parallel to the line $4x + 2y = 5$.
 - b) Let $f(x)$ be a straight line function for which $f(0) = 15$ and $f(3) = 3$. Find the equation of the straight line.
 - c) Find the perpendicular distance from (-3,4) to the line $y = 4x + 2$.
 - d) Find the centre and radius of the circle $x^2 + y^2 + 4x + 6y = 12$.
 - e) Show that $(x + 3y)$ is a tangent to the circle $x^2 + y^2 - 3x - 3y + 2 = 0$.

- 2
- a) Evaluate the following limits;

$$\lim_{x \rightarrow \alpha} \frac{(7x^2 + 12)}{(3x^2 - 6)}$$

- b) Compute $\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$ for the following case.

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



c) i) Find the derivative of $y = \frac{(x^3 + 4x^2 + 5)}{x^3}$

ii) Evaluate the integral $\int_0^2 (x^5 + x^2) dx$

d) Sum of two numbers is 30. Find the numbers such that

i) if their product is maximum

ii) if their sums of squares are minimum

e) Find the area of the region bounded by $f(x) = (2x - 1)$, the x-axis and the lines $x = 2$ and $x = 7$.
