Here are the instructions from the exam:

Part I

Some of the statements below are always correct the others are sometimes incorrect. Indicate which are which by marking

$\boxed{\text{a}}$ for statements that are $\boxed{\textbf{A}}$lways true
$\boxed{\text{b}}$ for statements that may $\boxed{\textbf{B}}$e false

Here are some statements that could have been used:

- If $f(x, y)$ is a continuous function on the region R of all (x, y) with $x^2+y^2 < 1$ then $f(x, y)$ must have a maximum at some point in that region.
- If you use the method of Lagrange multipliers to solve the problem of maximizing $K^{1/2}L^{1/3} - 2K - 3L$ with the constraint $2K + 6L = 3$ then the value of λ, the Lagrange multiplier, that you find is the partial elasticity of K with respect to L.
- If the function $f(x, y)$ does not have a maximum in the region R then the function $g(x, y) = 6 - 3f(x.y)$ does not have a minimum in R
- The point in the plane $2x + 3y + 4z = 6$ that is closest to the origin is also the point that minimizes the function $f(x, y, z) = x^2 + y^2 + z^2$ subject to the constraint $2x + 3y + 4z = 6$.
- The Envelope Theorem gives a technique for testing if a critical point of a function is a local maximum.