<http://ramanujan.math.trinity.edu/wtrench/texts/TRENCH_LAGRANGE_MULTIPLIERS.PDF>

the extrema subject to two constraints is on page 11 in the link above





I don’t get how they can take the derivative of $g\_{1}$ and $g\_{2}$ with respect to $x\_{1} and x\_{2}$ when they are defined as

$$h\_{1}=h\_{1}\left(x\_{3},x\_{4},…,x\_{n}\right)=x\_{1} and h\_{2}=h\_{2}\left(x\_{3},x\_{4},…,x\_{n}\right)=x\_{2}$$

I need a mathematical justification for how this can be written simply as (21) when $x\_{1} and x\_{2}$ are defined as functions from other variables: $x\_{3},x\_{4},…,x\_{n}$

Is it by using the chain rule or something else? Please og through the detailed steps for how this can be a normal quadratic matrix as defined in the implicit function theorem and by that showing why this is an appliable form of the implicit function theorem nonsingular matrix in (21):

Note:





Search for the theorem in this link if you want to see more from the implicit function theorem. It is on page 420

<http://ramanujan.math.trinity.edu/wtrench/texts/TRENCH_REAL_ANALYSIS.PDF>