TEST II: A LOOK AHEAD

- FORMULA SHEET WILL HAVE THE 2nd DERIVATIVE TEST, EXTREME VALUE Thm FOR FUNCTIONS OF TWO VARIABLES, THE BOX BELOW THAT Thm which explains the application of the Extreme Value Thm, Method of Lagrange MULTIPLIERS Box in §11.8.
- YOU WILL NEED TO REMEMBER DEF^n's FOR OTHER THINGS LIKE, the chain rule, linearization of $f(x,y)$ or $f(x,y,z)$, eq^n of tangent plane for graph, level surface or parametrized surface, the directional derivative and most importantly ∇f.
- THIS TEST COVERS §10.5, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8.
- I ASSUME YOU REMEMBER THE FORMULAS FROM TEST I's formula sheet modulo arclength, T, N, B, κ, τ and Frenet-Serret Formulas. You should be able to calculate $A \cdot B$, $A \times B$, $A \pm B$, cA etc... and also understand what they mean geometrically.
- THE MAIN TOPIC ON TEST II IS PARTIAL DIFFERENTIATION so §11.3, §11.5 and "Constrained Partials" will be 60% of the test. Then probably 10% on linearizations, total differentials, min/max for $f(x,y)$ and Lagrange Multipliers. (Each).
- THERE WILL BE A HOMEWORK PROBLEM OR PROBLEMS ON THE TEST, so make sure you understand the easy-moderately difficult req^d homework. (the only difficult req^d problem in chapter 11 is §11.7 #49 others fair game)
- QUESTIONS YOU SHOULD BE ABLE TO ANSWER BY TEST II
  - $f(x,y)$ is differentiable when _____. A convenient test is to check if _____ are continuous near the point of differentiation.
  - the eq^n for the tangent plane to $z = f(x,y)$ at $(a,b,f(a,b))$ is ___
  - the Clairaut Thm tells us what?
  - $z = z(x(u,v), y(u,v))$ has ___ dependent variable, ___ intermediate variables and ___ independent variables.
  - Generally the derivative of $f: \mathbb{R}^m \to \mathbb{R}^n$ is the ___ ___ ___.
  - The directional derivative tells you what? How to min/max with it?