

## Review 2 Math 261

Any term in **bold face** know the definition well enough to state it on the test. The definition you give should be very similar to the one in the book or one with similar detail.

Section 14.1 Terms: **function of several variables**, **level curves**, domain, range,

be able to find domains and level curves **Sample problems** : exercises # 12,17, 39

Section 14.2 Terms: **limit of  $f(x,y)$  as  $(x,y)$  approaches  $(a,b)$** , **continuous at  $(a,b)$** ( in terms of limits)

be able to evaluate limits along different paths. show limits exist or don't exist, show a functions is continuous  
**Sample problems** : Example 5, exercises # 9, 29

Section 14.3 Terms: **partial derivatives** (in terms of limits), **Higher order Derivatives**

know notations for partial derivatives (912), how to compute partials(912), **Sample problems** : exercises 17,21,57, 72

Section 14.4 Terms: **tangent plane**, **linearization differential  $dz$**

know how to: find tangents planes, approximate with tangent planes, compute  $dz$  **Sample problems** : example 2, exercises # 11, 27, 35

Section 14.5 Terms: **chain rules**, **implicit function theorems**

be able to apply the chain rules to find partials and derivatives **Sample problems** : examples 3, 5,8 exercises # 21, 45

Section 14.6 Terms: **directional derivative**, **gradient**, **tangent plane to level surface**

be able to: compute gradients and directional derivatives in different ways, apply properties of gradient **Sample problems** : example 6, Theorem 15, exercises #11, 23

Section 14.7 Terms: **local max/min**, **critical points**, **second derivative test**

be able to: find critical points and apply the second derivative test, Theorem 8. **Sample problems** : examples 3, 6,7 exercises # 9,34

Section 14.8 **Method of Lagrange Multiplier**, be able to set up a system of equations for lagrange multipliers and be able to solve simple systems of equations **Sample problems** : examples 2,3 exercises # 3,5,40

Section 15.1-15.2 **Double integral over a rectangle**, Fubini's Theorem

15.2 exercises # 4,5,18

Section 15.3 Example 1, exercise 4