MA 242 Test 4 Review Sheet

Section 6.1 Vector Fields:
- Sketch the vector field **F**
- Be able to find the gradient vector field of f
- Examples p. 12: 11,13, and the matching examples from in class

Section 6.2 Line Integrals:
- Know how to find the line integral of f along a curve C in $\mathbf{R}^2$ or $\mathbf{R}^3$
- Be able to calculate the mass of a wire using line integrals
- Be able to find a parametric representation for a line segment, a circle, y=f(x), x=g(y)
- Examples p 25: 3, 5, 11, and the examples from class. [More Line Integral Practice](#)

Section 6.3 Line Integrals of Vector Fields:
- Understand the definition of path independence (p. 36)

- Find the line integral of a vector field **F** along C
- Be able to state the result of the Fundamental Theorem for Line Integrals (p.35)
- Show **F** is or is not conservative (curl **F= 0**)
- Given a conservative function **F** find its potential function f
- Find the work done by a vector field **F** moving an object along a curve C

- Examples p. 47: 1, 5, 11,13 and from in class/webassign
- [Worksheet for finding a potential function](#)

Section 6.4 Parametric Surfaces
- Find a parametric representation of a given surface
- Examples from in class and Maple

Section 6.5 Surface Integrals
- Be able to find the [surface area](#) of a parametric surface (Examples p. 91:1,3,5 and in class)
- Be able to find the mass of a parametric surface (Examples p. 91: 9,11,15—remember if f(x,y,z) represents density we would be finding mass)
- Be able to find the flux through parametric surface (Examples p. 91: 17,19,21)
[Surface Integrals Worksheet](#)

Also plan to do [Extra Test 4 Problems](#) and [solutions](#).