Math 117
Topics to review for Exam 3

Line Integrals

- Know how to parametrize curves.
- Know how to evaluate line integrals of the form $\int F \cdot dr$ where $F$ is a vector field.
- Know how to evaluate line integrals using a parametrization of a curve with respect to arc length $(ds)$, $x \ (dx)$, and $y \ (dy)$
- Know how to use a line integral to calculate the work done by a force field $F$ on an object moving along a path $C$.
- Know how to evaluate line integrals along piecewise smooth curves.
- Know the definition of conservative vector field and how to determine if a vector field is conservative.
- Know how to find a potential function for a conservative vector field.
- Know how AND when to use the Fundamental Theorem of Line Integrals to evaluate a line integral.
- Know how AND when to use Green’s Theorem to evaluate a line integral.
- Know how to use Green’s Theorem to find the area enclosed by a curve.
- Know how to use the chain rule (from Math 115) to show that the Fundamental Theorem of Line Integrals is true.

Surface Integrals

- Know how to parametrize surfaces.