

- Techniques of Integration, Chapter 8:
 - Basic formulas
Substitution, including how to deal with definite integrals: Should be able to use the antiderivative formulas involving powers, exponential and logarithm functions, trig and inverse-trig functions, but not hyperbolic functions.
 - Integration by parts
The basic formula, repeated use, and solving for the integral.
 - Partial fractions
Expressing a fraction as a sum of simpler fractions, as well as being able to integrate the simpler fractions. But (i) degrees of numerator and denominator would be OK to begin with, and (ii) denominator would have degree at most 3, and either factoring would be “obvious” or it would already be factored for you.
 - Integrals of trig functions
Use of trig identities $\sin^2 \theta + \cos^2 \theta = 1$ and $\tan^2 \theta + 1 = \sec^2 \theta$, as well as the formulas from 221 for $\sin^2 \theta$ and $\cos^2 \theta$. No products of $\sin u$ and $\cos v$ where $u \neq v$.
 - Trig substitutions
While I would draw a triangle, you can just manipulate formulas if you prefer. But you need to be able to handle definite integrals.
 - Numerical integration
Carry out Trapezoidal rule or Simpson’s rule for a small number of intervals: Don’t need to do error estimates
 - Improper integrals
Use limits! If an integral is improper and you write down an answer without specifically using limit(s), you will get zero credit. Remember, the trouble spot might not be at an end point! Use direct comparison test for convergence without evaluating, but not limit comparison test.
- Conic Sections and Polar Coordinates, §10.1-§10.6
 - Find equations for ellipse, parabola, hyperbola in standard positions, from a description and/or picture

- From an equation, graph the conic and find foci or asymptotes: Directrix only for parabola
- Eccentricity, how to calculate, and what eccentricity values correspond to which conic sections
- Getting rid of xy term: What angle to use, and how to change coordinates to use it
- The discriminant, to identify a curve without rotation
- Find a parametric description for moving along a curve from a description in words
- From a parametric description, find the curve and describe motion along it
- For a parametrically describe curve, find slope or tangent line
- Polar coordinates: graphing simple curves
Finding intersection points, calculating slope