 **Calculus II – MTH 182 – Part 1**

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| **Area between Curves**  Given the interval , and the upper function and the lower function , the area between the curves is | **Improper Integrals**  Fix a number and assume that is integrable over for all . The improper integral over is defined with a limit. |
| **Disk Method** | **Shell Method** |
| **Volume, Density, Mean Value Theorem**      such that | **The p-Integral over**  Valid for all exponents . However, the integral is not improper for . |
| **Integration by Parts**  Choose *u* such that *u’* is simpler than *u* itself  Choose *dv* such that can be evaluated  Sometimes, is a good choice | **Trig Integrals**  For integrals involving , when , try  For integrals involving , when , try  For integrals involving , when , try |
| **Center of Mass** |
| **Partial Fractions**  Given fraction , if proper and the denominator is factorable, , it decomposes to:  If the term appears in , it contributes  If the term appears in , it contributes  When using the above method, a trig sub may be required. A common trig sub is:  If is improper, use long division. |
| **Taylor Polynomials** |
| **Parametric Equations**  Given point and slope , such that |