Student Name:

MATH 10A – Fall 2018
Discussion 12

This document is a collective effort of multiple GSIs for Math10A Fall 2018. Make sure you also go through the homework thoroughly and read the assigned readings and do the "Word Problems" from the textbooks.

Substitution with Definite Integrals

Evaluate the following definite integrals. If you use u substitution, state your variable u. Think about how you determined which substitution u to use.

1. $\int_1^2 x\sqrt{(x-1)}dx$
2. $\int_0^1 \frac{dx}{(1+\sqrt{x})^4}dx$

Integration by Parts

1. Evaluate the following integrals. (Hint: For the last integral first make and substitution and then use integration by parts to evaluate.)
   - $f(x) = \int_1^2 \frac{ln(x)}{x^2}dx$
   - $f(x) = \int x^2 sin(\pi x)dx$
   - $f(x) = \int cos(\sqrt{x})dx$
2. A model for salicylic acid concentration in the bloodstream of patients in an low-dose aspirin trial is given by the following function:

   $$C(t) = 11.4te^{-t}$$

   Where t is measured in hours and C is measured in in μ g/mL.
   Calculate $\int_0^4 C(t)dt$ and include the units in your answer.

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Partial Fractions (if time allows)

Evaluate the following integrals.

1. $\int \frac{x-9}{(x+5)(x-2)}dx$
2. $\int_0^1 \frac{2}{2x^2+3x+1}dx$
3. $\int \frac{ax}{x^2-bx}dx$