MATH 1700 D01 Summer 2016 Assignment 1

SHOW ALL WORK to get full marks. Leave answers as a fraction. For example, leave it as fractions such as $1/7$ as opposed to decimals such as $0.142857$. Word problems should have sentence answers with units. Fractions should be lowest terms.

All assignments must be handed in on UMLearn as **one PDF file**. Late assignments will not be accepted. Failure to follow the instructions will result in a mark of 0.

[1]  1. Write the following "I have read and understood the instructions."

[7]  2. Use 4 subintervals, and right endpoints, to approximate the area under the curve $y = 3x^2 - 3$ from $x = 1$ to $x = 2$.

[10]  3. Use the Riemann sum compute the area under the curve of $y = x^3 + x + 2$ from $x = 1$ to $x = 3$.

[10]  4. Use the definition of the definite integral to compute

$$\int_{-1}^{2} (x^2 - 3x - 2)\, dx$$

5. Use the Fundamental Theorem of Calculus to compute

[5]  (a) $\displaystyle\int_{-1}^{2} (x^2 - 3x - 2)\, dx$

[6]  (b) $\displaystyle\int_{1}^{2} \left( e^t + 3^t - \frac{4}{t^3} + \frac{2}{t} \right) dt$

[6]  (c) $\displaystyle\int_{1}^{4} \frac{(\sqrt{y} + 1)^2}{y}\, dy$

[3]  (d) $\displaystyle\int_{-1}^{2} \frac{y^2 + 2}{y}\, dy$

6. Compute the following derivatives

[3]  (a) $\displaystyle\frac{d}{dx} \int_{5}^{x} \left( \frac{\cos t}{\sqrt{t + 1}} \right) dt$

[4]  (b) $\displaystyle\frac{d}{dx} \int_{1}^{\tan x} \left( \frac{ue^u}{\sqrt{u + 3}} \right) du$

[5]  (c) $\displaystyle\frac{d}{dy} \int_{\sin y}^{y^2} \left( \frac{u}{u^{2016} + 1} \right) du$

1

This assignment is out of 60 points.