UNIVERSITY OF MANITOBA

MATH 1700 D01

Assignment 2

This assignment is based on units 3 and 4.

1.
Sketch the region bounded between the curves $y = \sin x$, $y = \cos x$, $x = 0$, $x = 2\pi$. Find the area of this region.

2.
Let R be the region bounded by the graphs of $y = x$ and $x = 4y - y^2$. Which is greater, the volume of the solid generated when R is revolved about the x-axis or the y-axis ?

3.
Sketch the region R bounded by the curves $y = x^2$ and $y = \sqrt{x}$ between $x = 0$ and $x = 1$. Set up, but **DO NOT EVALUATE**, integrals that can be used to find the volume of the solid generated if R is revolved about the x-axis

(a) using cylindrical shells,

(b) using disks or washers.

4.
Evaluate.

(a) $\int (x^2 - 2x)e^{kx}\,dx$ (hint: use integration by part)

(b) $\int e^{2x} \sin 3x\,dx$ (hint: use integration by part)

(c) $\int \sqrt{\sin x} \cos^3 x\,dx$

(d) $\int \sin^6 x\,dx$.