UNIVERSITY OF MANITOBA

MATH 1700 D01

Assignment 2

Due date: January 30, 2016 (Before midnight)

Total marks: 100

All assignments must be submitted ONLINE, in ONE single pdf file following the procedure explained on UM Learn. If you have trouble submitting them the right way, please contact the DE technical support.
Your assignment will not be graded if you fail to submit it ONLINE, in ONE single file.

This assignment is based on units 3 and 4. SHOW ALL WORK to get full marks. Leave answers as exact answers. For example, leave it as $1/7$ **as opposed to** 0.142857**.**

1.(14 points)
Sketch the region bounded between the curves $y = \sin\left(\frac{\pi x}{2}\right)$ and $y = x$. Find the area of this region.

2.(16 points)
Let R be the region in the first quadrant bounded by the graphs of $y = x$ and $y = x^2$. Which is greater, the volume of the solid generated when R is revolved about the x-axis or the y-axis ?

3.(14 points)
Sketch the region R bounded by the curves $y = x^2$, $y = 0$ and $x = 1$. Evaluate the integrals that can be used to find the volume of the solid generated if R is revolved about the y-axis

(a) using cylindrical shells,

(b) using disks or washers.

4.
Evaluate.

(a) (14 points) $\int \cos x \cos 2x \, dx$ (hint: use integration by part)

(b) (14 points) $\int x^2 e^{-3x}\, dx$ (hint: use integration by part)

(c) (14 points) $\int \cos^3 x \sin^4 x\, dx$

(d) (14 points) $\int \cos^4 x\, dx$.