Math 101 – WORKSHEET 9
SOLIDS OF REVOLUTION,

(1) Solids of revolution
   (a) (Final 2014, variant) Find the volume of the solid generated by rotating the finite region bounded by $y = \frac{1}{x}$ and $3x + 3y = 10$ about the line $y = -\frac{4}{3}$. It will be useful to sketch the region first.

   (b) The area between the y-axis, the curve $y = x^2$ and the line $y = 4$ is rotated about the y-axis. What is the volume of the resulting region?

Date: 20/1/2016, Worksheet by Lior Silberman. This instructional material is excluded from the terms of UBC Policy 81.

(2) (Work)

(a) (Final, 2012) A tank in the shape of a hemispherical bowl of radius $R = 3\text{m}$ is full of water. It is to be emptied through an outlet extending $H = 2\text{m}$ above its top. Using the values $\rho = 1000\text{kg/m}^3$ for the density of water and $g = 9.8\text{m/s}^2$ for the acceleration due to gravity, find the work (in Joules) required to empty the tank completely. There is no need to simplify your answer but you must evaluate all integrals.