Mathematics 1120H – Calculus II: Integrals and Series
TRENT UNIVERSITY, Summer 2018

Assignment #4
An Oblate Spheroid
Due on Wednesday, 18 July.

The half-ellipse $\frac{x^2}{4} + y^2 = 1$, $x \geq 0$, is revolved about the y-axis. The resulting solid is like a squashed sphere, and is technically an "oblate spheroid".

1. Compute the volume of the oblate spheroid. *[4]*

2. Compute the surface area of the oblate spheroid. *[6]*

NOTE. Trying to compute the surface area of a general ellipsoid $\frac{x^2}{a^2} + \frac{y^2}{b^2} + \frac{z^2}{c^2} = 1$ usually results in integrals involving antiderivatives that cannot be expressed in elementary terms. Oblate spheroid above are among the exceptions to the rule.