Note 7.2 - Surface of Revolution

1 Introduction

We study certain interesting type of geometric objects formed by rotation a curve about certain vertical or horizontal lines (the *axis*).

2 Revolution

We introduce four possible revolutions. Take graphs $y = f(x)$ over $[a, b]$, or $x = g(y)$ over $[c, d]$ and rotate around either x or y-axis:

We get a *surface of revolution* this way. In this note, we compute its surface area and the volume of solids they bound over respective intervals.

3 Volume of Revolution - Disc Method

Let's apply the basic principle of cutting the solid into thin slices for every infinitesimal change of x (or y):

4 Volume of Revolution - Shell Method

Let's do the same thing for the other modes of rotations.

5 Examples