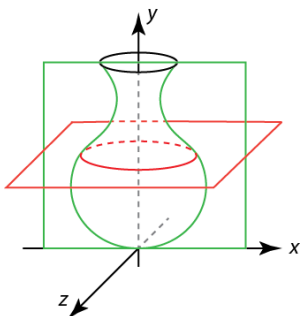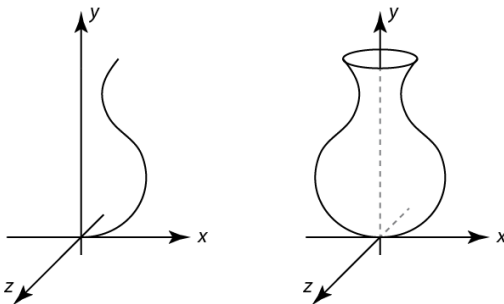# Surfaces of Revolution

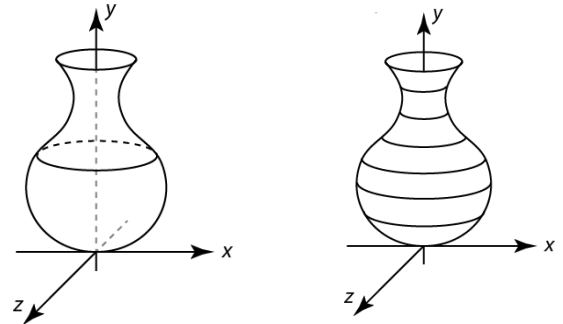**Brian Curless**
CSE 457
Spring 2013

Surfaces of revolution

Idea: rotate a 2D **profile curve** around an axis.

What kinds of shapes can you model this way?

Constructing surfaces of revolution

Constructing surfaces of revolution

Given: A set of points $C[n]$ on a curve in the xy-plane:

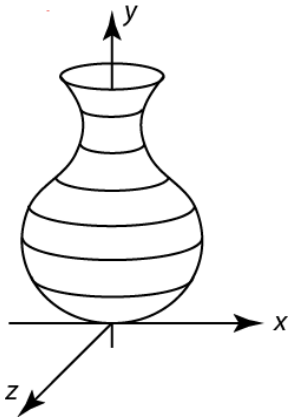$$C[n] = \begin{bmatrix} C_x[n] \\ C_y[n] \\ 0 \\ 1 \end{bmatrix} \quad \text{where } n \in [0, N]$$

Let $R_y(\theta_m)$ be a rotation about the y-axis by angle θ_m.

Find: A set of points $S[m, n]$ on the surface formed by rotating $C[n]$ rotated about the y-axis. Assume $m \in [0, M]$.

Solution:

Constructing surfaces of revolution

We now have an array of points, S[n, m] on the surface.

How would we turn this into a mesh of triangles?

How many triangles are generated?