

## Surfaces of Revolution

CSE 457  
Winter 2014

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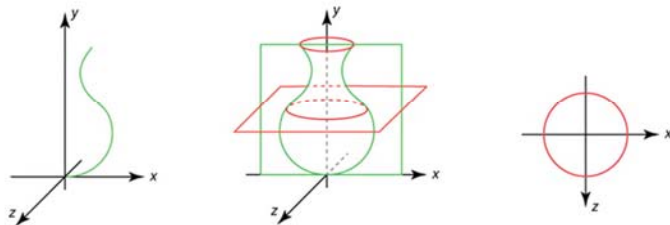
## Surfaces of revolution

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

What kinds of shapes can you model this way?

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### Constructing surfaces of revolution



**Given:** A curve  $C(u)$  in the  $xy$ -plane:

$$C(u) = \begin{bmatrix} c_x(u) \\ c_y(u) \\ 0 \\ 1 \end{bmatrix}$$

Let  $R_y(\theta)$  be a rotation about the  $y$ -axis.

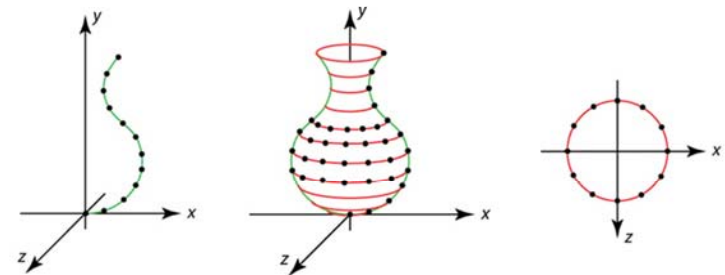
**Find:** A surface  $S(u,v)$  which is  $C(u)$  rotated about the  $y$ -axis, where  $u, v \in [0, 1]$ .

**Solution:**

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### Constructing surfaces of revolution

We can sample in  $u$  and  $v$  to get a grid of points over the surface.



How would we turn this into a mesh of triangles?

How would we generate normals?

How would we assign texture coordinates?

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