

Surfaces of Revolution

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

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

Let $R_y(\theta_j)$ be a rotation about the y -axis. By angle θ_j .

Find: A set of points $S[i, j]$ on the surface formed by rotating $C[i]$ rotated about the y -axis. Assume $j \in [0, M-1]$.

Solution:

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Constructing surfaces of revolution

We now have an array of points, $S[i, j]$ on the surface.

How would we turn this into a mesh of triangles?

How many triangles are generated?

How would we send the triangles to the graphics card?

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