Good Meshes

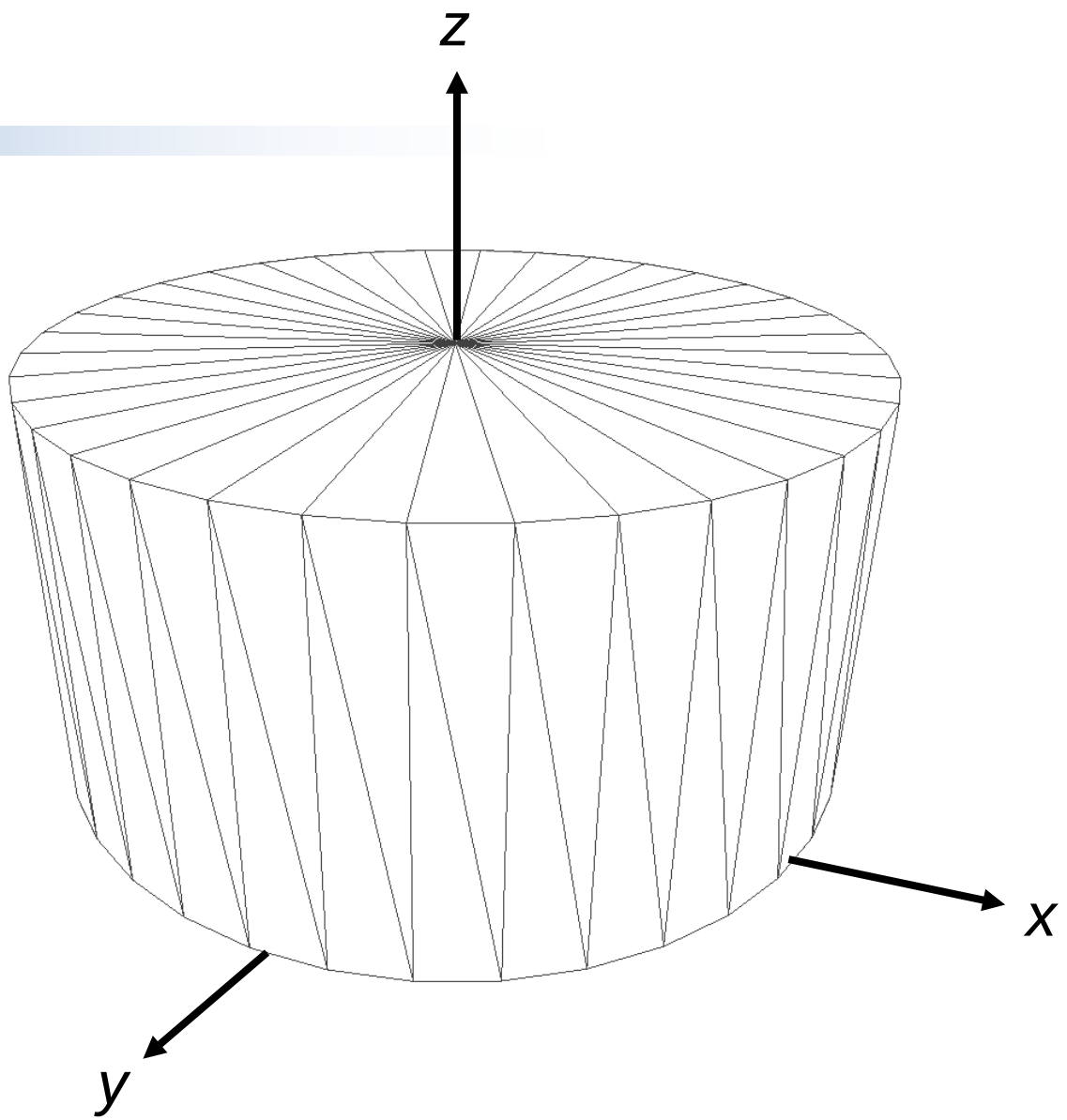
CS418 Interactive Computer Graphics

John C. Hart

Simple Meshes

- Cylinder

  $(x,y,z) = (\cos\theta, \sin\theta, z)$



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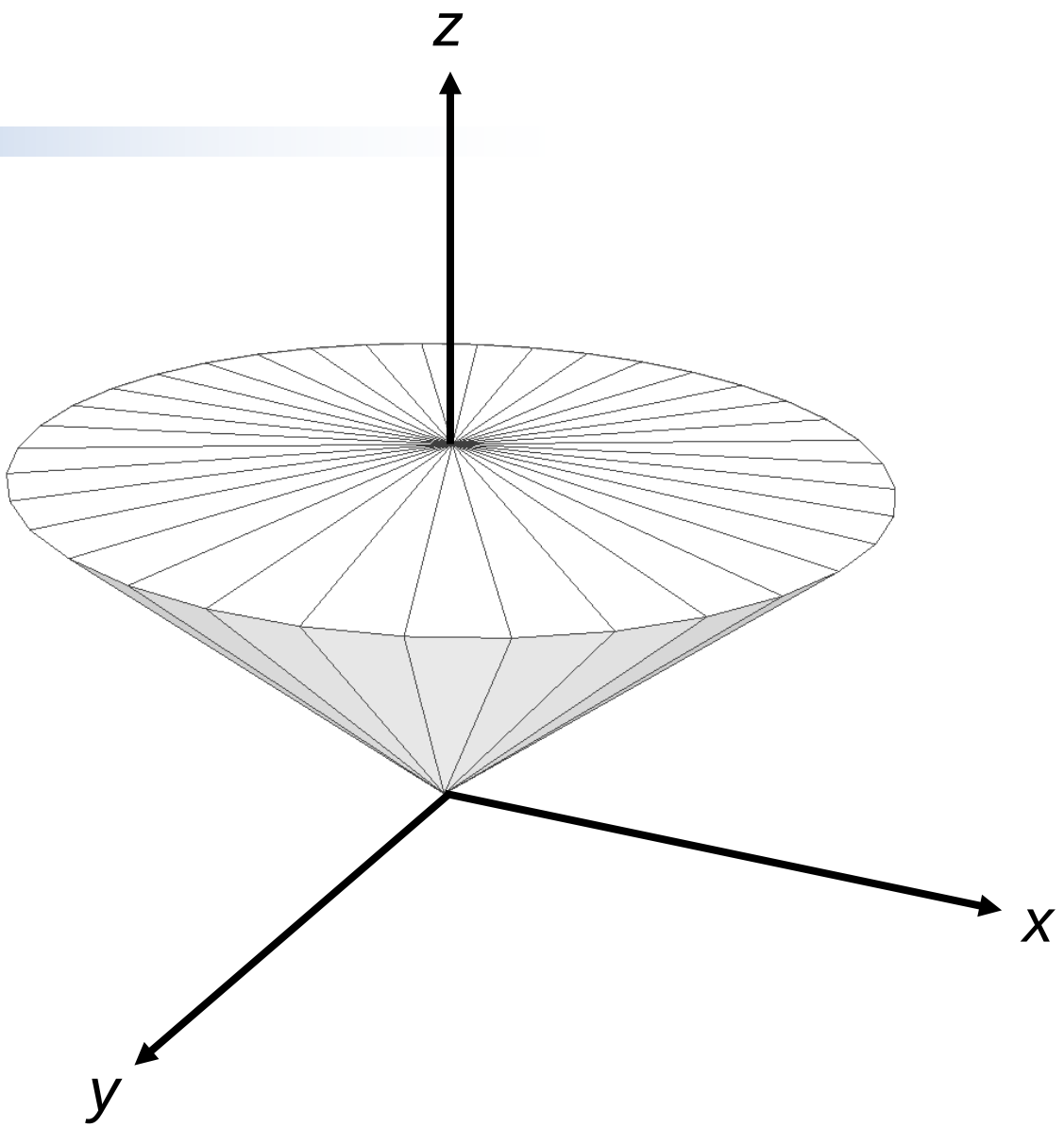

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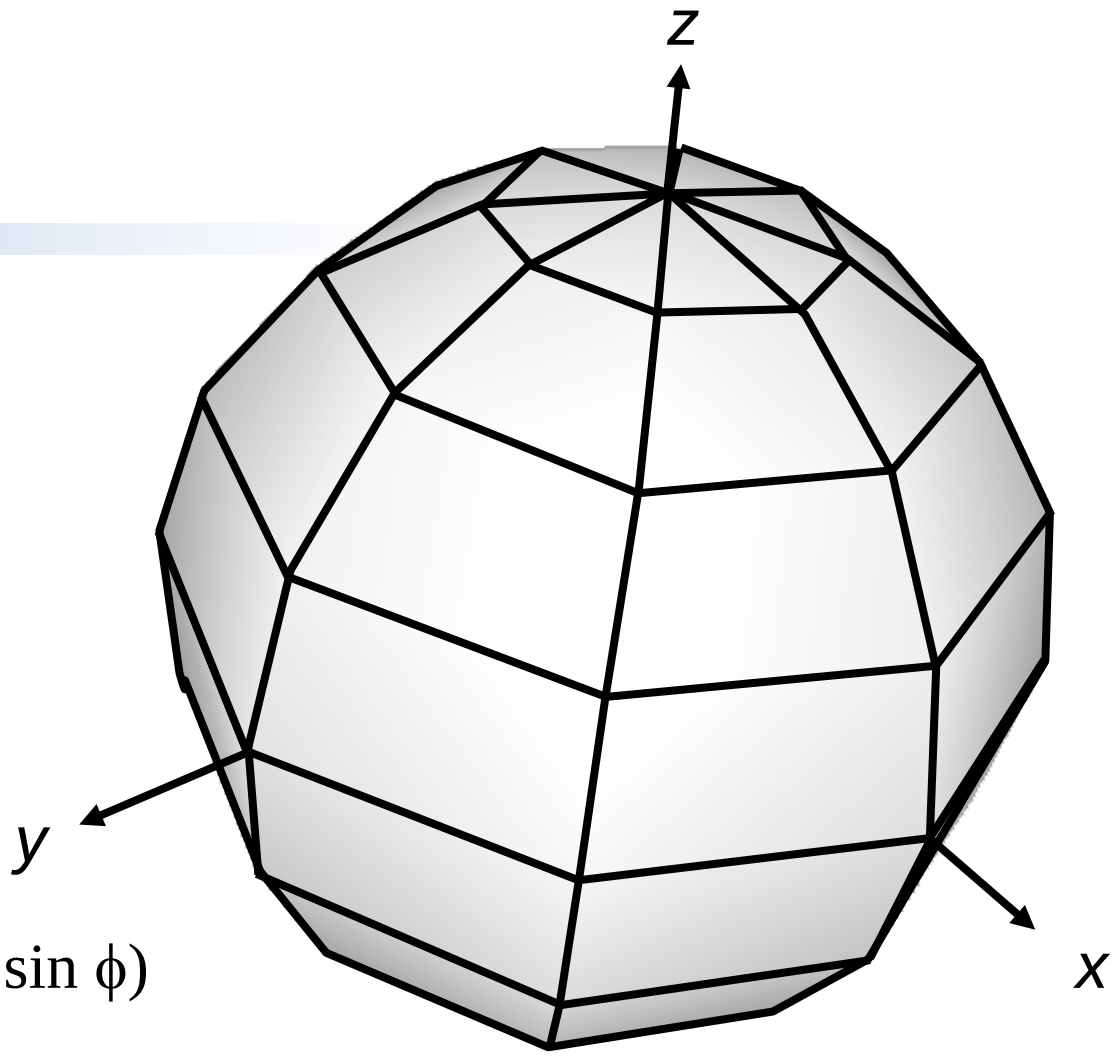
- Sphere

  $(x,y,z) = (\cos\phi\cos\theta, \cos\phi\sin\theta, \sin\phi)$



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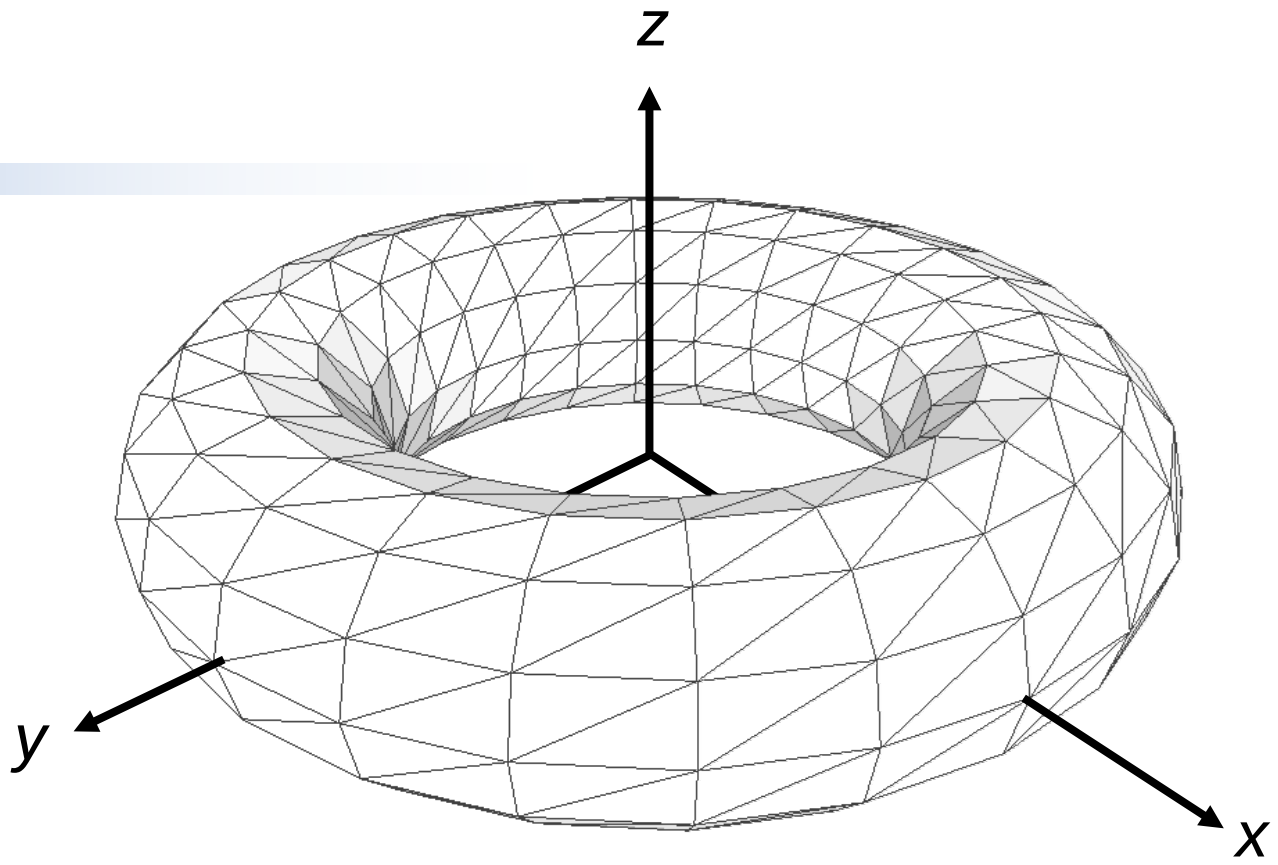

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- Torus

  $(x,y,z) = ((R + \cos\phi)\cos\theta, (R + \cos\phi)\sin\theta, \sin\phi)$

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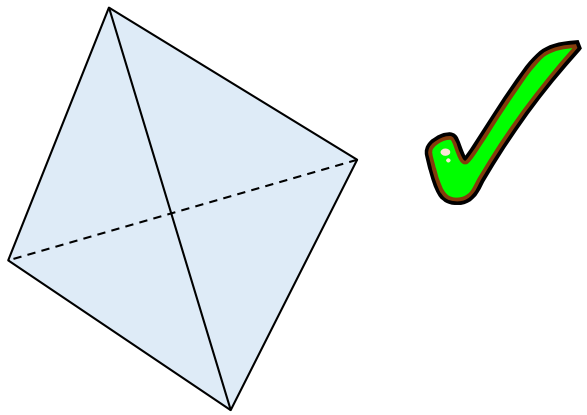

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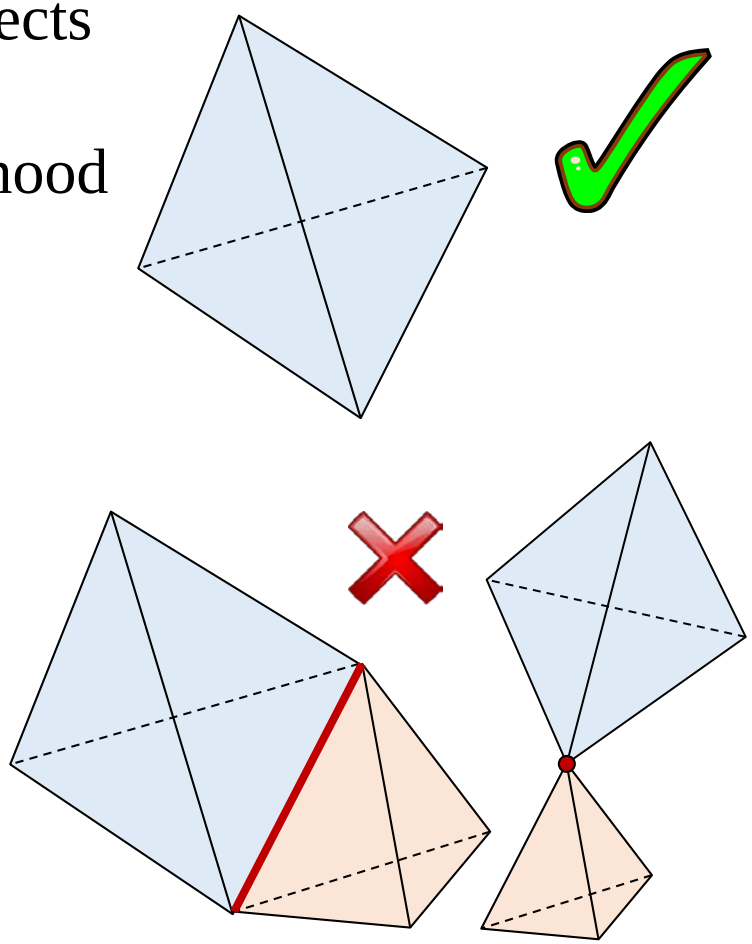

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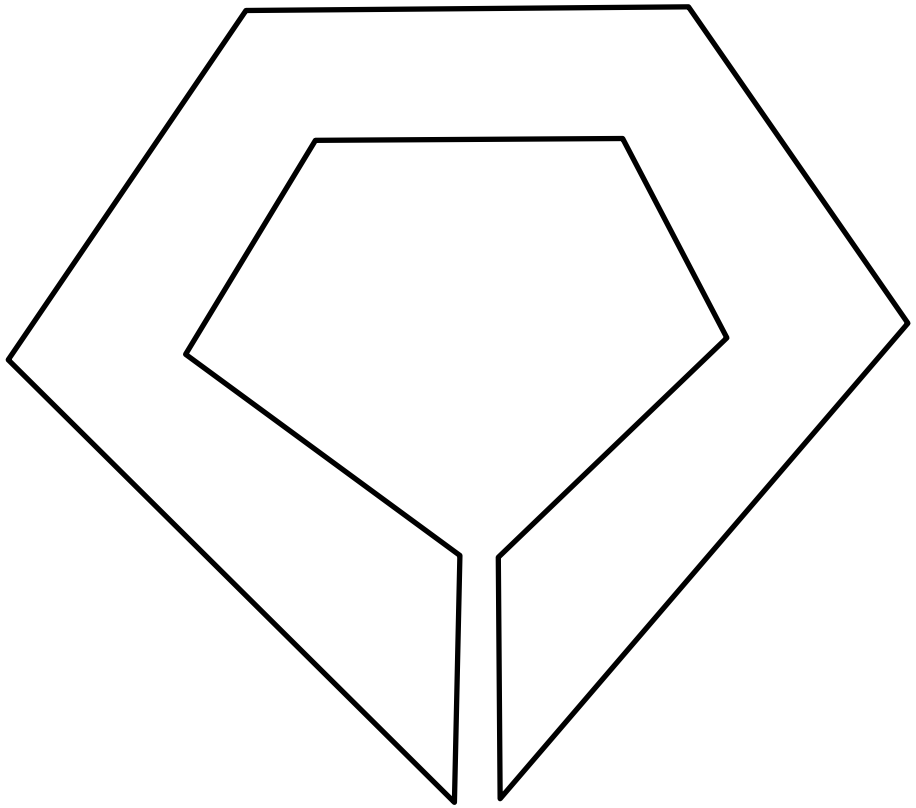

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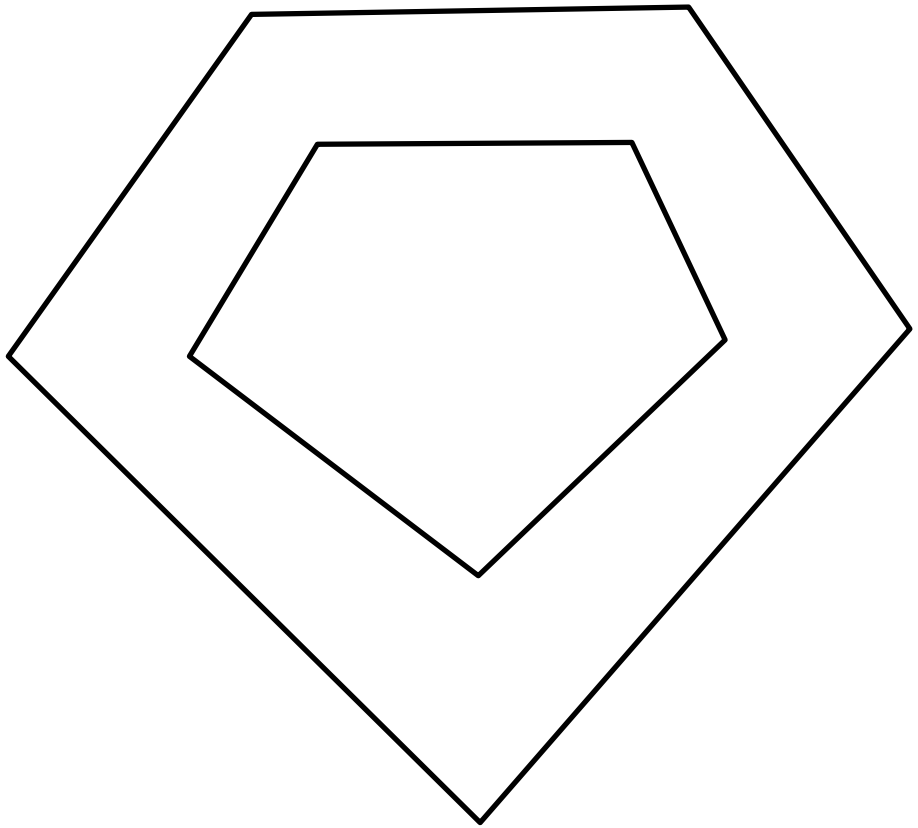

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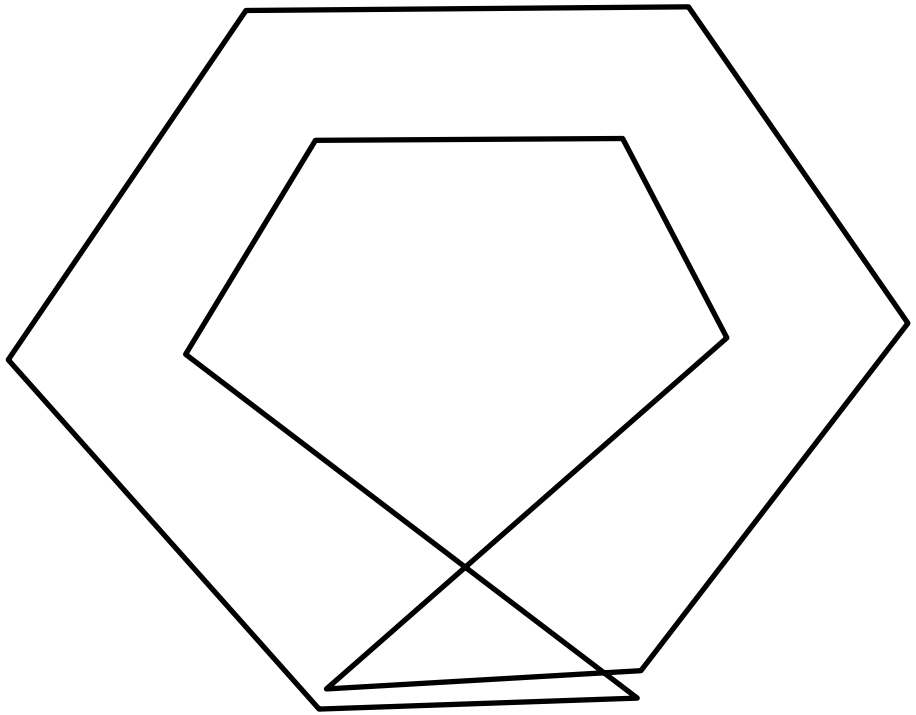

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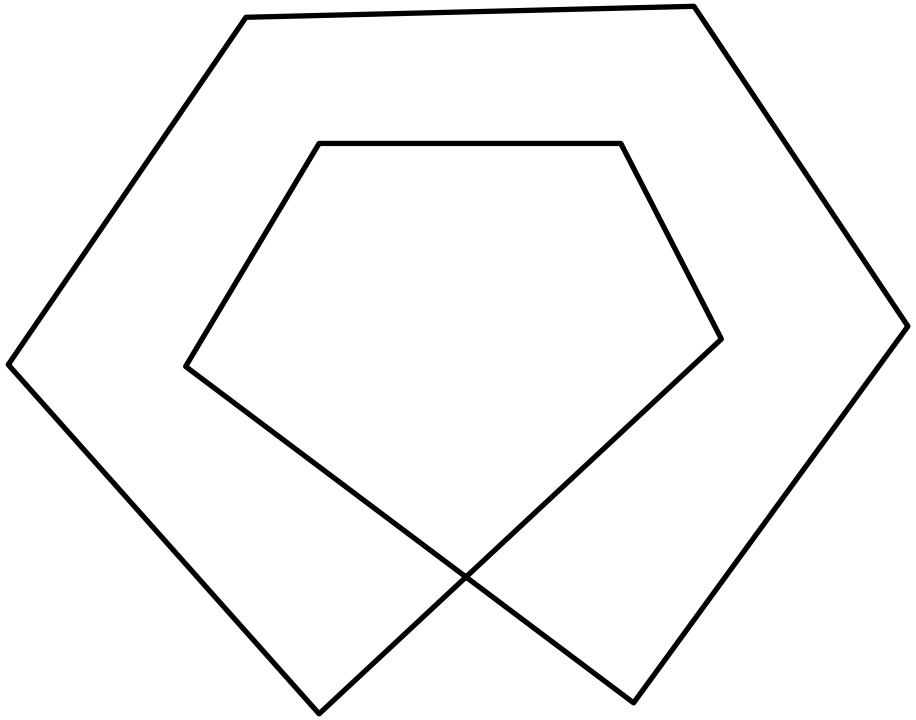

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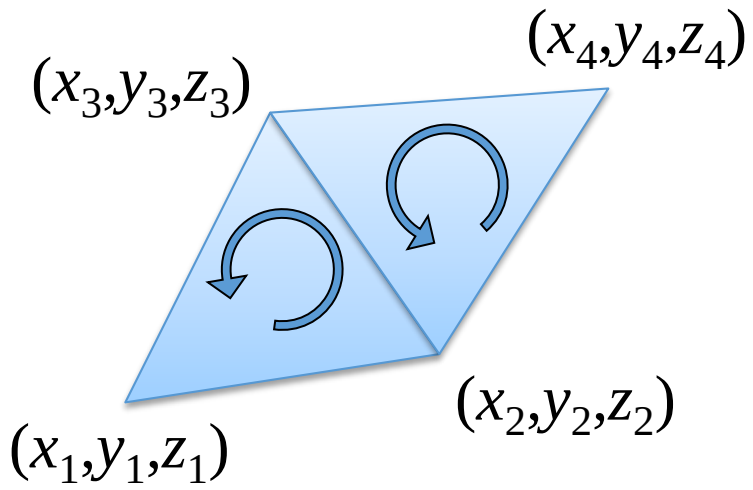
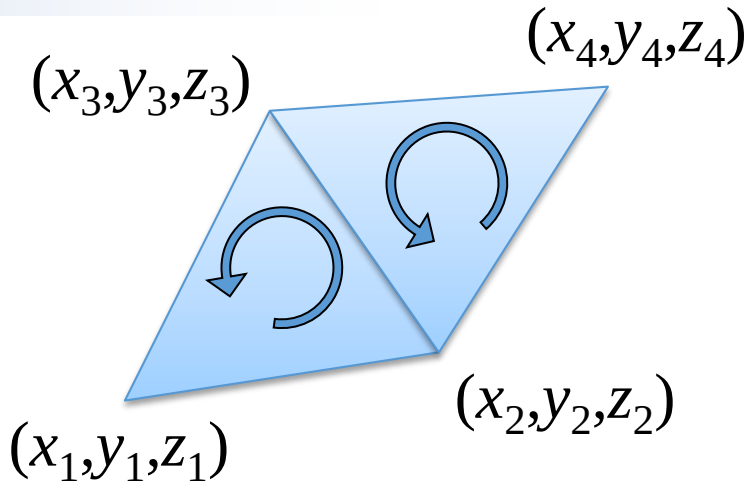
- **Ordering**: Vertices in CCW order when viewed from normal



Indexed Face Set

- Popular file format
  - VRML, Wavefront ".obj", etc.
- Ordered list of vertices
  - Prefaced by "v" (Wavefront)
  - Spatial coordinates x,y,z
  - Index given by order
- List of polygons
  - Prefaced by "f" (Wavefront)
  - Ordered list of vertex indices
  - Length = # of sides
  - Orientation given by order



v x_1 y_1 z_1
v x_2 y_2 z_2
v x_3 y_3 z_3
v x_4 y_4 z_4

f 1 2 3
f 2 4 3