

# The Right Conoid Surface \*

See “About Ruled Surfaces” in the Documentation menu.

A Right Conoid is a surface generated by a 1-parameter family of horizontal straight lines that all meet a vertical straight line. Perhaps the best known example has the parametric equations:

$$x = v \cos(u)$$

$$y = v \sin(u)$$

$$z = 2 \sin(u)$$

and another such surface is the “Helicoid”. The formulas in 3DXM deform one into the other — see the default morph:

$$x = v \cos(u)$$

$$y = v \sin(u)$$

$$z = 2 aa \sin(u) + (1 - aa) u,$$

with  $0 \leq aa \leq 1$ .

Notice, how the stable “pinch point singularity” of the Right Conoid disappears during this morph, passing through a non-stable singularity. For another family of Right Conoids, view the Whitney Umbrella and its default morph.

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\*This file is from the 3D-XploreMath project.  
Please see <http://vmm.math.uci.edu/3D-XplorMath/index.html>