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minimal surface

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Among the surfaces $F(x, y, z) = 0$, with F twice continuously differentiable, a *minimal surface* is such that in every of its points, the mean curvature vanishes. Because the mean curvature is the arithmetic mean of the principal curvatures κ_1 and κ_2 , the equation

$$\kappa_2 = -\kappa_1$$

is valid in each point of a minimal surface.

A minimal surface has also the property that every sufficiently little portion of it has smaller area than any other regular surface with the same boundary curve.

Trivially, a plane is a minimal surface. The catenoid is the only surface of revolution which is also a minimal surface.