

**Answer on Question #78759 – Math – Analytic Geometry  
Question**

Every cylinder has a circular base.

Is the statement true? Give reasons for your answers, either with a short proof or a counterexample.

**Solution**

The statement is False.

Wikipedia: <https://en.wikipedia.org/wiki/Cylinder>

A cylindrical surface is a surface consisting of all the points on all the lines which are parallel to a given line and which pass through a fixed plane curve in a plane not parallel to the given line.

A solid bounded by a cylindrical surface and two parallel planes is called a (solid) *cylinder*.

The region bounded by the cylindrical surface in either of the parallel planes is called a *base* of the cylinder. The two bases of a cylinder are congruent figures.

And only if the bases are disks (regions whose boundary is a circle) the cylinder is called a *circular cylinder*.

Therefore, not every cylinder has a circular base.

We may consider a counterexample.

An elliptic cylinder is a cylinder with an elliptical cross section.