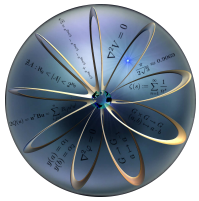

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parts of a ball

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Synonym	parts of ball
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Related topic	CircularSegment
Defines	spherical segment
Defines	spherical frustum
Defines	spherical cap
Defines	spherical calotte
Defines	spherical sector

Let us consider in $\mathbb{R}^3$ a ball of radius r and the sphere bounding the ball.

- Two parallel planes intersecting the ball separate between them from the ball a *spherical segment*, which can also be called a *spherical frustum* (see the frustum). The curved surface of the spherical segment is the *spherical zone*.
- In the special case that one of the planes is a tangent plane of the sphere, the spherical segment is a *spherical cap* and the spherical zone is a *spherical calotte*.
- The lateral surface of a circular cone with its apex in the `http://planetmath.org/Spherecent` of the ball divides the ball into two *spherical sectors*.

The distance h of the two planes intersecting the ball be is called the *height*.

The volume of the spherical cap is obtained from

$$V = \pi h^2 \left(r - \frac{h}{3} \right)$$

and the area of the corresponding spherical calotte and also a spherical zone from

$$A = 2\pi r h.$$

The volume of a spherical segment can be got as the difference of the volumes of two spherical caps.

The volume of a spherical sector may be calculated from

$$V = \frac{2}{3}\pi r^2 h,$$

where h is the height of the spherical cap of the spherical sector.