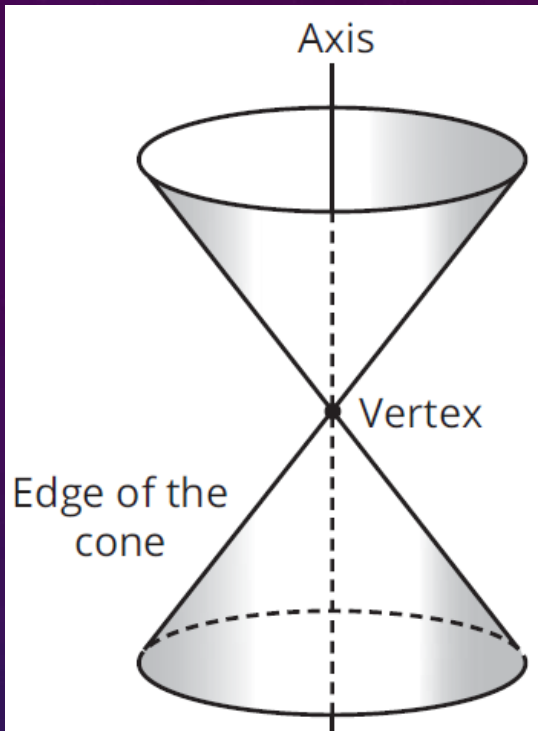


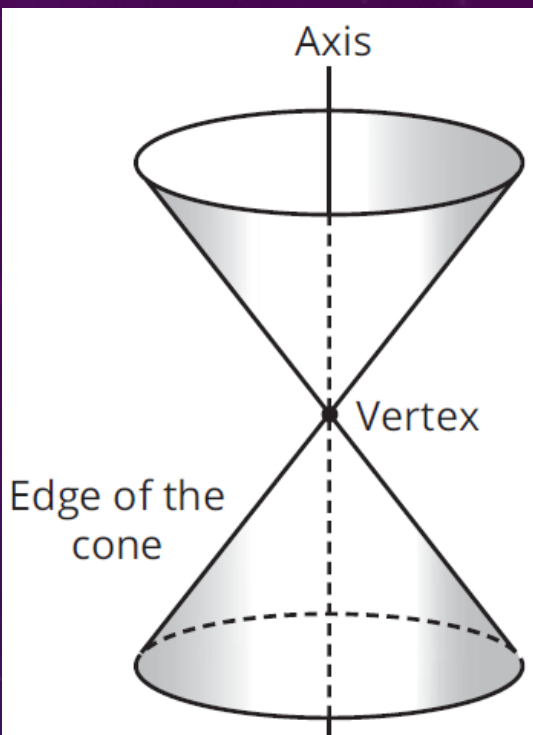
When a three-dimensional solid, such as a cube, is cut by a plane, the two-dimensional figure that results is called a plane section or cross-section of the solid. The shape of the cross-section depends on the position of the plane with respect to the solid.

Four special cross-sections, called **conic sections**, are formed when a plane intersects a solid called a double-napped cone. An example of a double-napped cone is shown. The upper and lower cones are called **nappes**.

Additionally, the intersection of a plane and a double-napped cone may form a point, a line, or intersecting lines. These cross-sections are called **degenerate conics**.

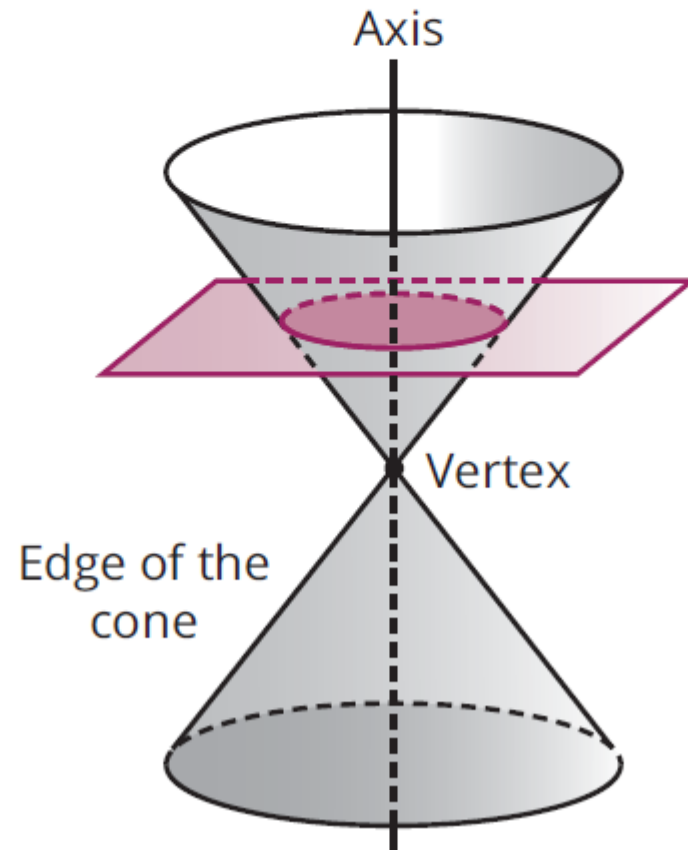


1. Describe how the intersection of a plane and a double-napped cone could result in a point.
2. Describe how the intersection of a plane and a double-napped cone could result in a line.

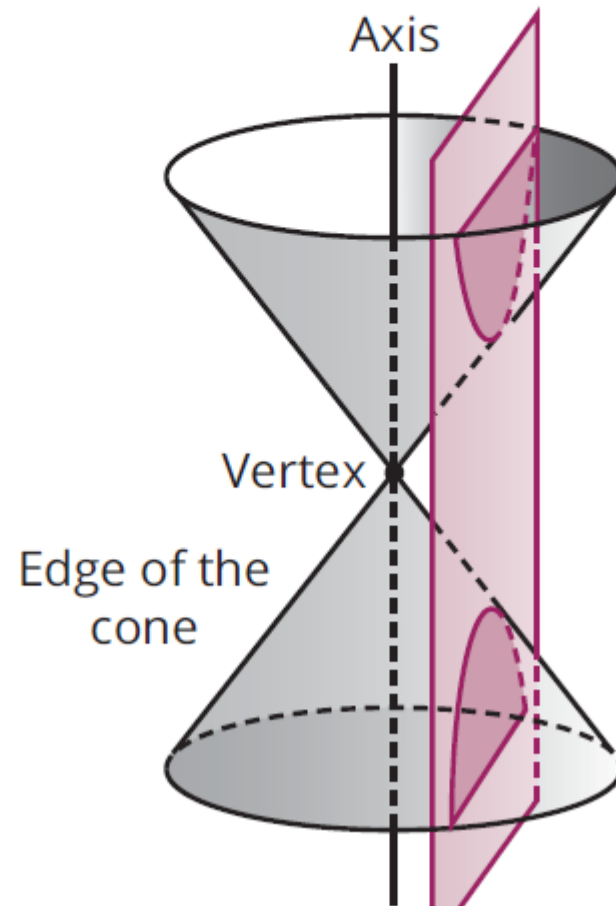


**3. Describe how the intersection of a plane and a double-napped cone could result in intersecting lines.**

When a plane intersects one nappe of a double-napped cone perpendicular to the axis of the cone, the curve that results is a circle.

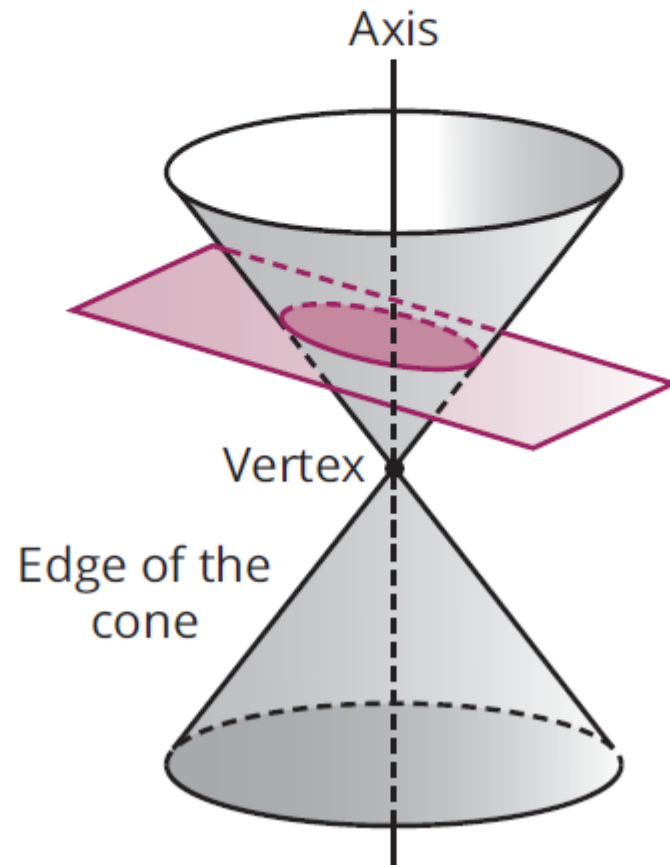


When a plane parallel to the axis of the cone intersects both nappes of the cone, the curve that results is a **hyperbola**.





When a plane intersects a single nappe not perpendicular to the axis, but at an angle that is less than the central angle of the nappe, the curve that results is an **ellipse**.



When a plane intersects one nappe of the double-napped cone parallel to the edge of the cone, the curve that results is a **parabola**.

