











GeoGebra Tutorial: Sector & Cone

No.	Toolbar Icon	Command	Remarks
1.		$O=(0,0)$	Fix it.
2.		$A=(1,0)$	Fix it.
3.		$B=Point(Sequence((cos(i^\circ), sin(i^\circ)), i, 1, 359))$	You may enter deg for °
4.		$c=CircularSector(O,A,B)$	Color: 0,153,255 Opacity: 25 Hide in 3D Graphics.
5.		$arc1=CircularArc(O,A,B)$	Color: orange Line Thickness: 5 Hide in 3D Graphics.
6.		$\alpha=Angle(A,O,B)$	Color: red Hide in 3D Graphics.
7.		Show 3D Graphics View. Hide axes and clipping box.	See Figure 1.
8.		$r=\alpha/(360^\circ)$	You may enter deg for °
9.		$h=sqrt(1-r^2)$	
10.		$V=Point(Segment(O,(0,0,h)))$	Color: red Hide in Graphics.
11.		$folded=z(V)==h$	
12.		$rr=sqrt(1-z(V)^2)$	
13.		$C=(rr,0,0)$	Show Label: Caption: A Hide in Graphics. Condition to Show Object: !folded
14.		$\beta=360^\circ*r/rr$	
15.		$D=(rr*cos(\beta),rr*sin(\beta),0)$	Show Label: Caption: B Hide in Graphics. Condition to Show Object: !folded
16.		$E=(rr*cos(\beta/2),rr*sin(\beta/2),0)$	Hide it.
17.		$arc2=CircumcircularArc(D,E,C)$	Color: orange Line Thickness: 5
18.		$arc3=Circle(O,C,xOyPlane)$	Color: orange Line Thickness: 5 Condition to Show Object: folded
19.		$f(x)=z(V)*(1-x/rr)$	Hide it.

No.	Toolbar Icon	Command	Remarks
20.		$S = \text{Surface}(u \cdot \cos(v), u \cdot \sin(v), f(u), u, 0, r, v, 0, \beta)$ Alternatively, use the following two commands: $\text{curve1} = \text{Curve}(x(V+t(D-V)), y(V+t(D-V)), z(V+t(D-V)), t, 0, 1)$ $S = \text{Surface}(\text{curve1}, \beta, z\text{Axis})$ This rotates curve1 about z-axis by β . See www.geogebra.org/manual/en/Surface_Command .	Color: 0,153,255 Opacity: 50 Line Thickness: 0 Hide A and B in 3D Graphics. See Figure 2.
21.		$R = (r, 0)$	Condition to Show Object: folded
22.		$s1 = \text{Segment}(O, A)$	Show Label: Caption: \$1\$ Color: Magenta Line Thickness: 5 Hide in 3D Graphics.
23.		$s2 = \text{Segment}(V, C)$	Show Label: Caption: \$1\$ Color: Magenta Line Thickness: 5 Hide in Graphics.
24.		$s3 = \text{Segment}(O, R)$	Show Label: Caption: \$r\$ Color: 0,153,0 Line Thickness: 5 Condition to Show Object: folded
25.		$s4 = \text{Segment}(V, O)$	Style: Dotted line
26.	ABC	$\frac{r}{1} = \text{FractionText}(r)$	LaTeX formula Large size Condition to Show Object: folded See Figure 3.
27.		Hide axes and grid in Graphics View. Change background color to 1/8 Gray. Press Ctrl+Shift+D to toggle "Selection Allowed" for all objects except points.	See Figure 4.

This example is based on the applet <https://ggbm.at/q9ud4ux8> by Arthur Lee.

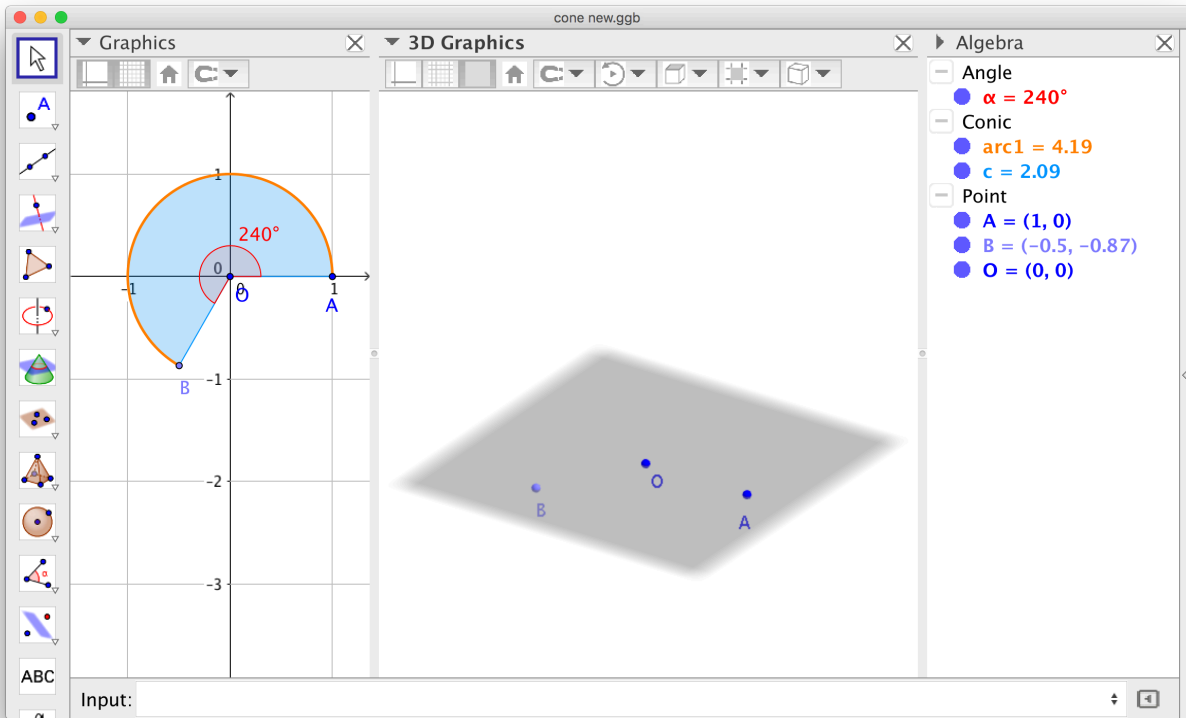


Figure 1

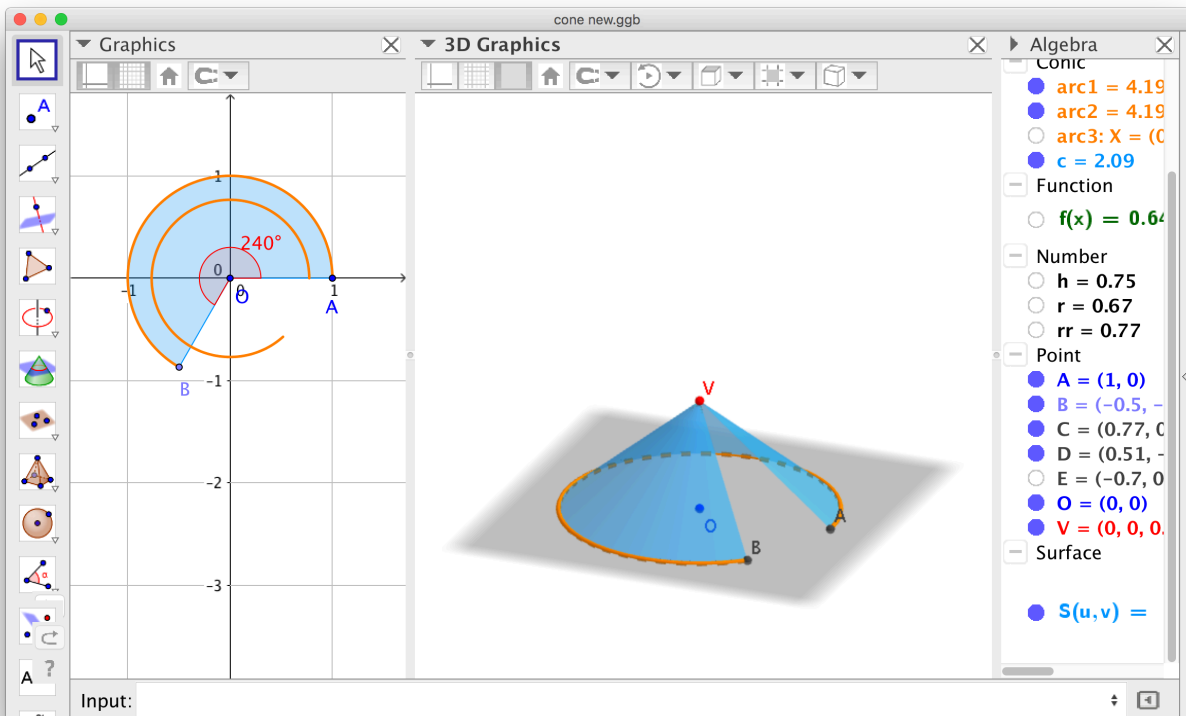


Figure 2

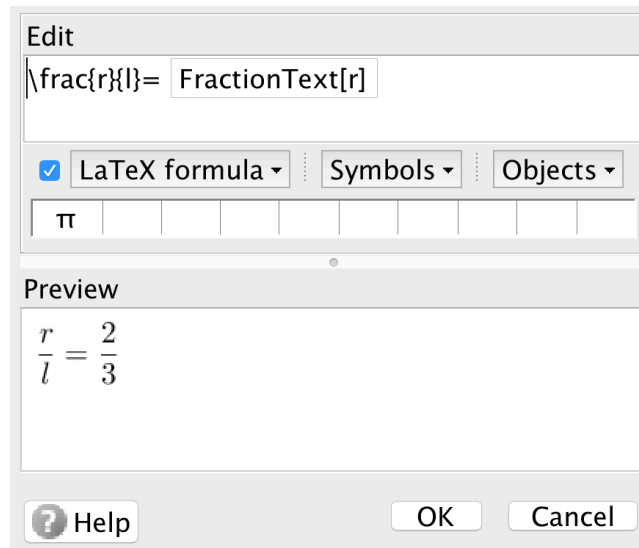


Figure 3

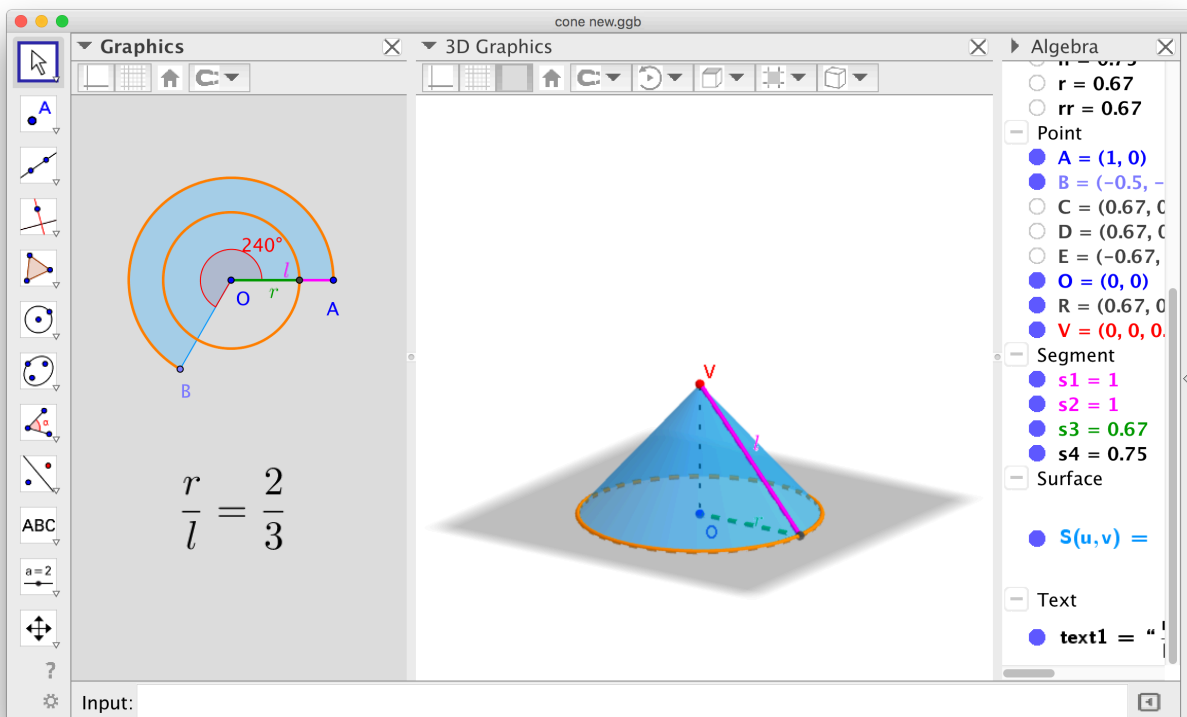


Figure 4