Answer on Question #78891 – Math – Analytic Geometry Question

Identify an axis of revolution and generating conic of the surface $4x^2 + 25y^2 + 4z^2 = 100$. Does this conic also generate

$$\frac{x^2}{4} + \frac{y^2}{25} + \frac{z^2}{4} = 1$$

Give reasons for your answer.

Solution

$$4x^{2} + 25y^{2} + 4z^{2} = 100$$

$$\frac{4x^{2} + 25y^{2} + 4z^{2}}{100} = \frac{100}{100}$$

$$\frac{x^{2} + z^{2}}{25} + \frac{y^{2}}{4} = 1$$

We have the spheroid (ellipsoid of revolution). Its rotation axis is y –axis.

$$\frac{x^2}{4} + \frac{y^2}{25} + \frac{z^2}{4} = 1$$

We have the spheroid (ellipsoid of revolution). Its rotation axis is y –axis.

We see that both have the same rotation axis which is the y –axis.

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