⑥

Thus, the equation of the line in the family $(d_\lambda)_{\lambda\in\mathbb{R}}$ that passes through P is:

$$\frac{x-(3\sqrt{2}-3)}{3/2} = \frac{y-0}{1} = \frac{z-(3-2\sqrt{2})}{\sqrt{2}-1}$$

We compute the equation of the line in the family $(d'_\mu)_{\mu\in\mathbb{R}}$ in the exact same way.

C.2.3. Find the rectilinear generatrices of the hyperboloid of one sheet

$$(\mathcal{H}_1)\quad \frac{x^2}{36}+\frac{y^2}{9}-\frac{z^2}{4}=1$$

which are parallel to the plane $(\Pi)\ x+y+z=0$

Solution: $d_\lambda: \begin{cases} \lambda\left(\frac{x}{6}+\frac{z}{2}\right)=1+\frac{y}{3} \\ \frac{x}{6}-\frac{z}{2}=\lambda\left(1-\frac{y}{3}\right)\end{cases}$

$d_\mu: \begin{cases} \mu\left(\frac{x}{6}+\frac{z}{2}\right)=1-\frac{y}{3} \\ \frac{x}{6}-\frac{z}{2}=\mu\left(1+\frac{y}{3}\right)\end{cases}$

You solve the systems, get $\vec{d_\lambda}$ and $\vec{d_\mu}$ and choose λ,μ s.t. $\vec{d_\lambda}\cdot\vec{n_\Pi} = \vec{d_\mu}\cdot\vec{n_\Pi}=0$