Step-1

Given $a=(2,-2,1)$.We have to find the length of a and write two independent vectors that are perpendicular to a.

Step-2

$$\|a\|^2 = a^T a$$

$$=(2,-2,1)\begin{pmatrix}2\\-2\\1\end{pmatrix}$$

$$=4+4+1=9$$

The length of a is $\|a\|=\sqrt{9}$

$$=\boxed{3}$$

Step-3

Let $\alpha=(x,y,z)$ is perpendicular to a

Therefore $a^T\alpha=0$

$$\Rightarrow (2,-2,1)\begin{pmatrix}x\\y\\z\end{pmatrix}=0$$

$$\Rightarrow 2x-2y+z=0$$

Putting $x=k_1, y=k_2$

$$\Rightarrow z=-2k_1+2k_2$$

Step-4

Therefore $\begin{pmatrix}x\\y\\z\end{pmatrix}=\begin{pmatrix}k_1\\k_2\\-2k_1+2k_2\end{pmatrix}$

$$=k_1\begin{pmatrix}1\\0\\-2\end{pmatrix}+k_2\begin{pmatrix}0\\1\\2\end{pmatrix}$$

Hence $\boxed{(1,0,-2),(0,1,2)}$ are two independent vectors perpendicular to a.