

Exercise 37

Find a line that lies entirely in the set defined by the equation $x^2 + y^2 - z^2 = 1$.

Solution

Choose any linear functions of t for x , y , and z that satisfy the equation; for example, $x = t$, $y = 1$, and $z = t$. Therefore, a parameterization for a line in the set is

$$\mathbf{r}(t) = (t, 1, t).$$