



Given

F ,

$n - t$

To find

n &

t -

Components

Solution

$$\sin \theta = \frac{S}{r}$$

$$OP = \sqrt{S^2 + y^2} = r \Rightarrow y = \sqrt{r^2 - S^2}$$

$$\cos \theta = \frac{y}{r}$$

$$\begin{aligned} \therefore F_n &= -F \cos \theta \\ &= -\frac{F \sqrt{r^2 - S^2}}{r} \end{aligned}$$

$$\begin{aligned} F_t &= F \sin \theta \\ &= F \times \frac{S}{r} \end{aligned}$$

$$F_t = \frac{FS}{r}$$