

Each problem is worth 5 points. Clear and complete justification is required for full credit.

1. Give parametric equations  $x(t)$ ,  $y(t)$ , and  $z(t)$ , along with bounds for  $t$ , for the line segment from  $(1,3,0)$  to  $(5,10,4)$ , which is the path a very scary witch flies along on her broom.

$$\begin{aligned}x(t) &= 1 + 4t \\y(t) &= 3 + 7t \\z(t) &= 4t\end{aligned}$$

$$\underline{0 \leq t \leq 1}$$

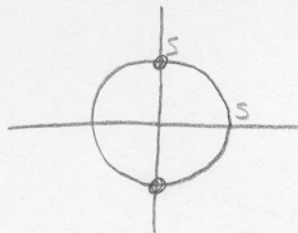
That is a rather biased generalization about witches. I bet most are very nice.

All the ones I've known have been very nice, honestly. Still, stereotypes are often based on misperceptions, so it's entirely possible that she might be seen as scary without actually doing anything to deserve it.

2. Give parametric equations  $x(t)$  and  $y(t)$  and bounds for  $t$  for the left half of a circle with radius 5, centered at the origin, and traversed counterclockwise.

$$\begin{aligned}x(t) &= 5 \cos t \\y(t) &= 5 \sin t\end{aligned}$$

$$\underline{\frac{\pi}{2} \leq t \leq \frac{3\pi}{2}}$$



$$\vec{r}(t) = \langle 5 \cos t, 5 \sin t \rangle$$

Great