8. Electron (5 points)

Electron rests at the origin. At the moment of time $t = 0$, an electric field is switched in: its modulus is constant and equal to E_0, but its direction rotates with a constant circular velocity ω in the $x - y$ plane. At the moment $t = 0$, it is directed along the x-axes.

1) Find the average velocity of the electron over a long time interval for $t > 0$.

2) Sketch the trajectory of the electron and calculate the geometrical characteristics of it.