Ec dif ordinarias

Problemas varios:

Punto 1 A:

Usando fuerza lorentz muestre que el problema se reduce a:

$$\frac{dV_x}{dt} = -w_0 V_y \sin(wt)$$

$$\frac{dV_y}{dt} = +w_0 V_x \sin(wt)$$

$$\frac{dV_z}{dt} = 0 \qquad \Rightarrow w_0 = |q| \frac{B_0}{M} \qquad w_0 = 1 \wedge w = 0,3$$

$$F = q(V \times B)$$

$$a = \frac{F}{M} = \frac{q}{M}(V \times B)$$

$$\Rightarrow V \times B = \left(V_x i + V_y j + V_z k\right) \times \left(B_x \hat{i} + B_y \hat{j} + B_z \hat{k}\right)$$

$B_z = 0$

$\Rightarrow$

$$F_x = \frac{q}{M}(V_x B_y - V_y B_x)$$

$$F_y = \frac{q}{M}(V_x B_y - V_y B_x)$$

$$\Rightarrow M\frac{dV_x}{dt} = q\left(V_x B_y - V_y B_x\right)$$

$$M\frac{dV_y}{dt} = q\left(V_x B_y - V_y B_x\right)$$

$$w_0 = \frac{q B_0}{M}$$

$$\Rightarrow \frac{dV_x}{dt} = -w_0 V_y \sin(wt)$$

$$\frac{dV_y}{dt} = w_0 V_x \sin(wt)$$

$B_z = 0 \Rightarrow \frac{dV_z}{dt} = 0$ ▨