Punto 4

Para Verlet se tiene:

$$x_{n+1} = x_n + v_n h + a_n \frac{h^2}{2}$$

$$v_{n+1} = v_n + (a_{n+1} + a_n)\frac{h}{2}$$

$$J = \begin{bmatrix} \frac{\partial x_{n+1}}{\partial x_n} & \frac{\partial x_{n+1}}{\partial v_n} \\ \frac{\partial v_{n+1}}{\partial x_n} & \frac{\partial v_{n+1}}{\partial v_n} \end{bmatrix} = \frac{\partial x_{n+1}}{\partial x_n}\frac{\partial v_{n+1}}{\partial v_n} - \frac{\partial x_{n+1}}{\partial v_n}\frac{\partial v_{n+1}}{\partial x_n}$$

$$= (1 \cdot 1) - (h \cdot 0) = 1 \Rightarrow \text{Simpléctico}$$