Practice Problems Related to Bremsstrahlung

Suppose that an electron has an initial speed \( v \) and an impact parameter \( b \) with respect to a nucleus of charge \( Z e \) that we will assume remains stationary. The electron starts very far from the nucleus.

1. Write a code to determine the path of the electron as a function of time, and its acceleration (that is, integrate the Lorentz force equation).

2. Use your path to determine \( \hat{d}(\omega) \). Do you find that you reproduce the limits (3) in the notes? For \( \omega \tau \gg 1 \), how does \( \hat{d}(\omega) \) scale with \( \omega \)? Can you obtain this dependence analytically?