HW#5

Due 2/22/00

1. Find the phase and group velocities of a1-D plasma wave in an ion-electron plasma $n^2 = P$.

2. A time varying electric field with $\vec{E}_{\parallel} = 0$ and a magnetic field in the z direction
The perpedicular componennt of the electric field is

$$\vec{E} = \vec{E_o}\exp[-i\ _ct]$$

Use the Lorentz force equation to fin the time vaiation of the perpendicular velocity of a charged particle under the force of this time varying electric field.

3. From the above problem, decompose the perpendicular E into two circularly polarized fields, anmd show that the roght handed will accelerate the electrons while the left handed one wil accelerated the ions.

4. Find the group velocity of a left cicularly polarized wave in an ion-electron plasma.