Questions – Finite Difference Method:

Name

1. Write down the compact notation for a plane wave in complex form of P(x+dx,t+dt)

2. What is the highest wavenumber k = 2 π/λ that can be properly discretized in a 1D medium with grid distance dx?

3. Explain and Proof convergence with the following equation:

$$c(k) = \frac{\omega}{k} = \frac{2}{kdt}\sin^{-1}\left[c\frac{dt}{dx}\sin k\frac{dx}{2}\right]$$

4. Explain the phenomenon of numerical anisotropy