2c.) $\lambda = 2\pi$, $c = 1$, $h = .1$, $\sigma = .5$

$1 - \sigma + \sigma \cos B$

$1 - .5 + .5 \cos .1 = .9975$

Fou: $|g| = \sqrt{|1 - \sigma + \sigma \cos B|^2 + (\sigma \sin B)^2}$

$\sigma^2 \sin^2 B = .00249$

$= \sqrt{(.9975)^2 + \sigma^2 \sin^2 B}$

$= \sqrt{.995 + .00249}$

$|g| = .99875^N \Rightarrow N = \dfrac{\ln .5}{\ln .99875} = \boxed{555}$

$.99875^N = .5$

First order upwind requires 555 steps before the amplitude is $\frac{1}{2}$ of the exact solution.

- - - - - - - - - - -

L-W: $|G| = 1 - \sigma^2 + \sigma^2 \cos B + i\sigma \sin B$

$|g| = \sqrt{(1 - \sigma^2 + \sigma^2 \cos B)^2 + (\sigma \sin B)^2}$

$|g| = .999997$

$.999997^N = .5 \Rightarrow \dfrac{\ln .5}{\ln .999997} \Rightarrow \boxed{N = 296,247}$

Lax-Wendroff requires 296247 steps before the amplitude is $\frac{1}{2}$ of the exact solution.