

Lecture

2/10/05

$$kx - \omega t = N$$

$$\text{Let } t \rightarrow t + \Delta t$$

$$x \rightarrow x + \Delta x$$

Require $N = \text{constant}$, i.e.,
look at same point on wave
pattern. Thus

$$k\Delta x - \omega\Delta t = 0$$

$$\Rightarrow k\Delta x = \omega\Delta t$$

$$\frac{\Delta x}{\Delta t} \equiv v = \frac{\omega}{k} = \frac{2\pi f}{2\pi/\lambda}$$

So $v = f\lambda$

Check sign: If Δt is positive
then Δx is positive. This is a
"traveling wave" moving toward
positive x .

If the argument is
 $kx + \omega t$, then if Δt
is positive, Δx is negative.

That is, this is a traveling
wave moving toward negative x .