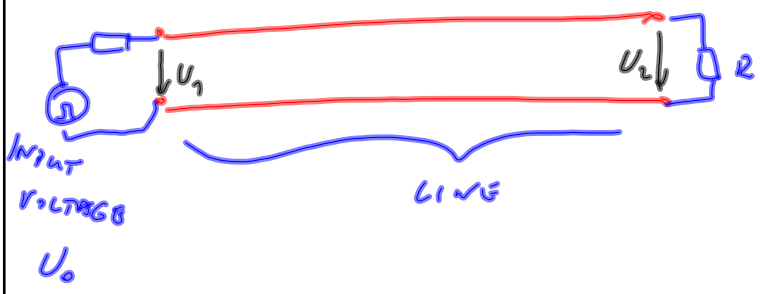
IEL E 2016 1.12.2016 10:00

BEST TIME FOR LABORATORIES:

ON FRIDAY 9.th DECEMBER

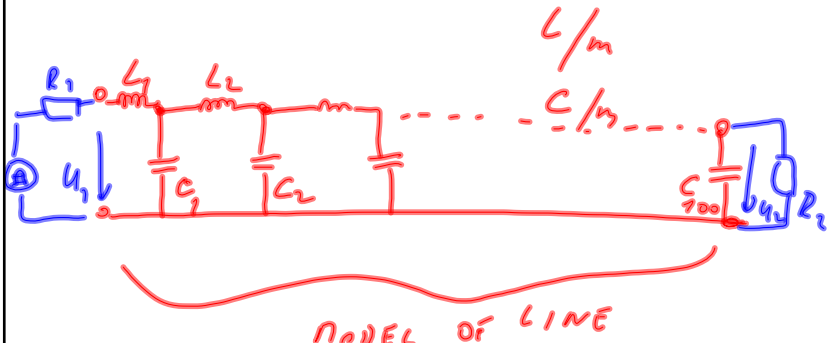
12 - 14. 00

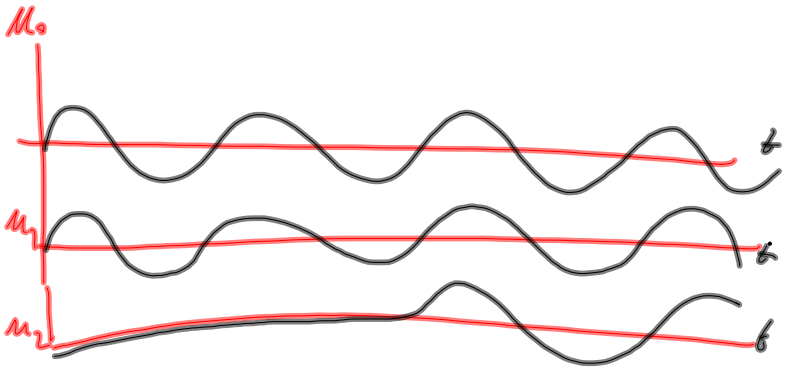
LINE (REFLECTIONS)



TELEGRAPH EQUATION

PARTIAL DIFFERENTIAL EQUATION





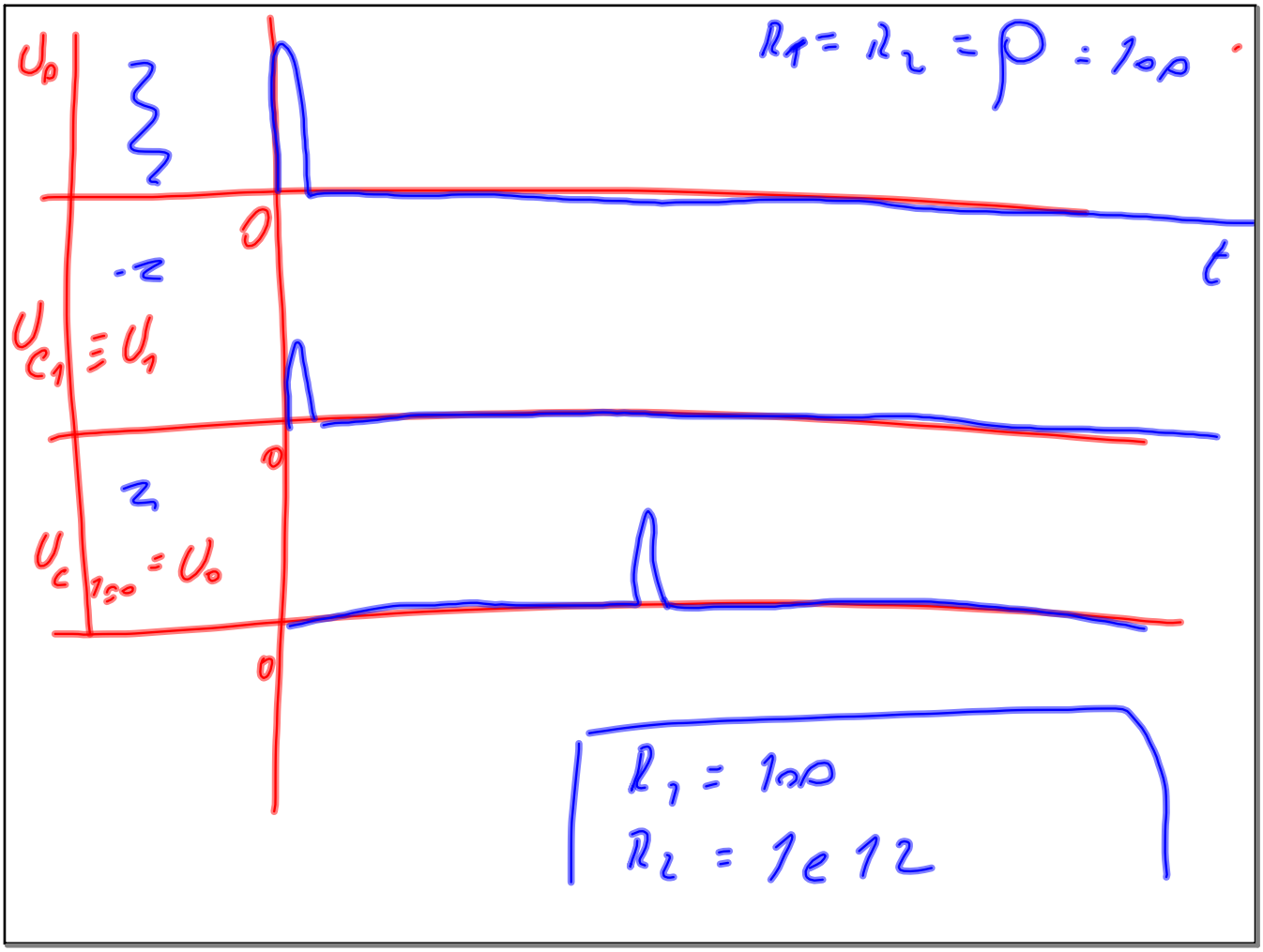
WITHOUT REFLECTION

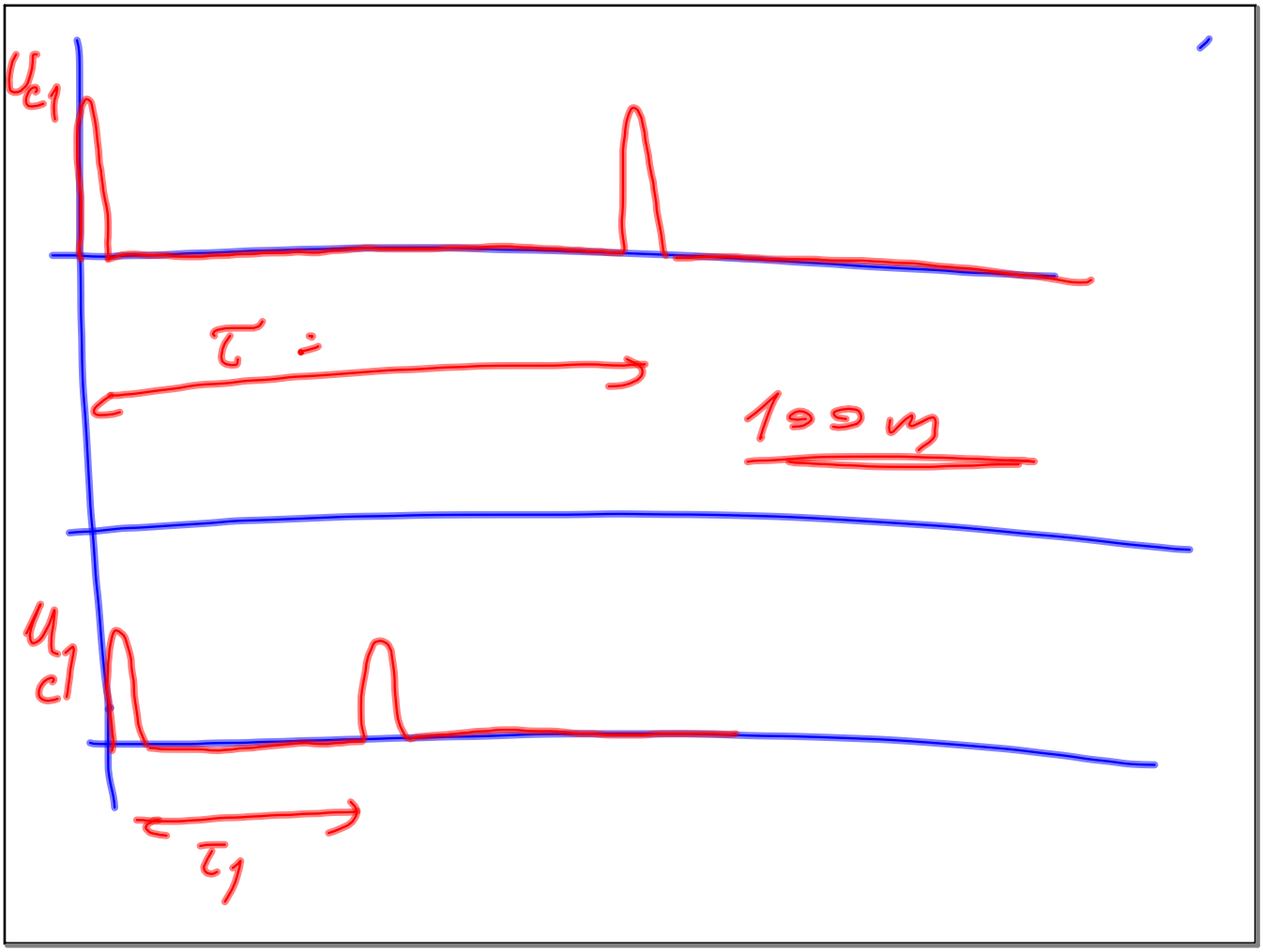
$$R_1 = R_2 = \rho = \sqrt{\frac{L}{C}} = \sqrt{\frac{10^{-8}}{10^{-12}}} = 100\,\Omega$$

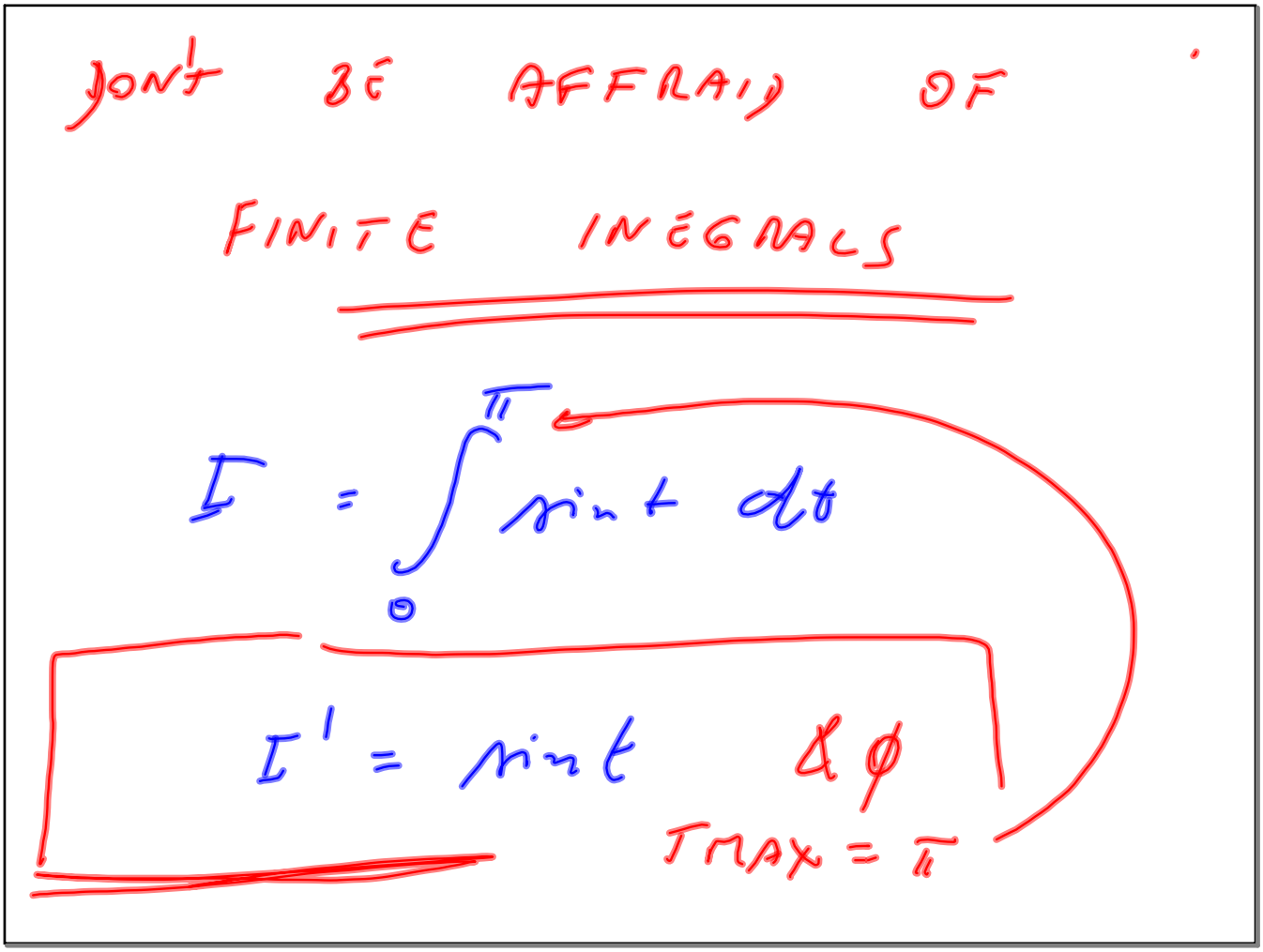
CHARACTERISTIC IMPEDANCE OF LINE

(IT IS KNOWN)

12 1-10:12


U_0
$R_1 = R_2 = \rho = 1\Omega$
0
t
$U_{C_1} = U_1$
0
$U_{C_{100}} = U_0$
0
$R_1 = 1\Omega$
$R_2 = 1e12$


u_{c1}
τ :
100 ms
u_{c1}
τ_1


DON'T BE AFFRAID OF
FINITE INTEGALS
$I = \int_0^{\pi} \sin t \, dt$
$I' = \sin t \quad \Delta\phi$
$T_{MAX} = \pi$

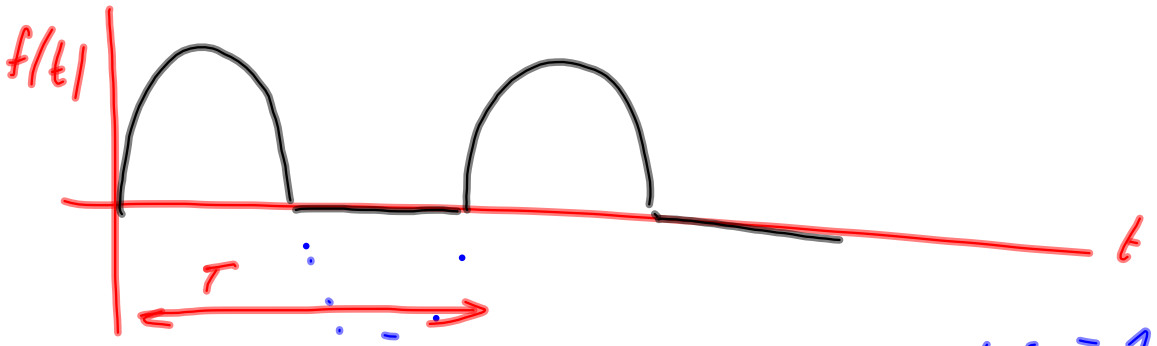
FOURIER SERIES

ANY PERIODICAL FUNCTION

$f(t)$ CAN BE EXPRESSED

$$f(t) = \frac{a_0}{2} + a_1 \cos \omega t + a_2 \cos 2\omega t + a_3 \cos 3\omega t + \dots$$

$$+ b_1 \sin \omega t + b_2 \sin 2\omega t + b_3 \sin 3\omega t + \dots$$



$\omega = 1$

$$\omega = \frac{2\pi}{T} \quad \checkmark \quad T = 2\pi$$

$$a_0 = \frac{2}{T} \int_0^T f(t)\,dt$$

$$a_1 = \frac{2}{T} \int_0^T f(t) \cos \omega t\,dt$$

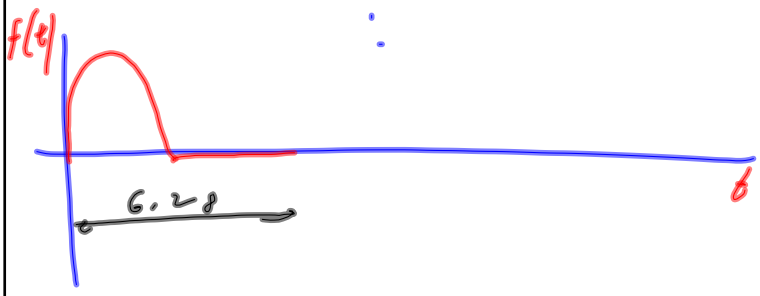
$$a_2 = \frac{2}{T} \int_0^T f(t) \cos 2\omega t\,dt$$

$$b_1 = \frac{2}{T} \int_0^T f(t) \sin \omega t\,dt$$

$$a_0' = \frac{2}{T} f(t)$$

$$a_1' = \frac{2}{T} f(t) \cos \omega t$$

$$a_2' = \frac{2}{T} f(t) \cos 2\omega t$$



$T = 2\pi \qquad \omega = 1$

$T \cap \Delta x = 2\pi$

$$a_0' = \frac{1}{\pi} f(t)\,d\theta$$

$\Rightarrow \quad a_0 =$ ✓