# Parcial 1

miércoles, marzo 01, 2023 11:18 AM

a) demuestre que el tiempo de viaje del pulso de luz está dado por:

$$c\,t(x) = n_0\sqrt{(x - T[0])^2 + T[1]^2} + n_1\sqrt{(x - R[0])^2 + R[1]^2}$$

$n_0 = 1$

$n_1 = 1.33$

$\bar{v} = \frac{\bar{x}}{t}$ ; $n = \frac{c}{\bar{v}}$ $\therefore \bar{v} = \frac{c}{n}$

igualo $\bar{v}$

$\frac{\bar{x}}{t} = \frac{c}{n}$

$\therefore ct = \bar{x}n$

→ como son dos medios (aire y agua):

$ct = n_0\bar{x}_{air} + n_1\bar{x}_{agua}$

$\bar{x}_{air} = \sqrt{(x - x_{air})^2 + y_{air}^2}$
$\bar{x}_{agua} = \sqrt{(x - x_{ag})^2 + y_{ag}^2}$
} fórmula de distancia

$T[0] = x_{air}$ y $T[1] = y_{air}$ → Transmisor
$R[0] = x_{agua}$ y $R[1] = y_{agua}$ → receptor

$\therefore c\,t(x) = n_0\sqrt{(x - T[0])^2 + T[1]^2} + n_1\sqrt{(x - R[0])^2 + R[1]^2}$

Q.E.D