3 ligninger med 2 ukjente ?? Nei:
Multipliser (a) med $-c/n_2$ på begge sider og bruk

$$\varepsilon_1 \sin\theta_1 = \frac{1}{v_1^2 \mu_1} \cdot \frac{n_2 \sin\theta_2}{n_1} = \frac{n_1}{v_1 c \mu_1} \cdot \frac{n_2 \sin\theta_2}{n_1} \quad \text{og}$$

$$\varepsilon_2 \sin\theta_2 = \frac{1}{v_2^2 \mu_2} \sin\theta_2 = \frac{n_2 \sin\theta_2}{v_2 c \mu_2} .$$ Vi ser da at

ligning (a) og (c) gir akkurat det samme, nemlig:

$$E_{ipo} - E_{rpo} = \beta E_{tpo} \qquad \left(\beta \equiv \mu_1 v_1 / \mu_2 v_2\right)$$

Mens (b) kan skrives slik:

$$E_{ipo} + E_{rpo} = \alpha E_{tpo} \qquad \left(\alpha \equiv \frac{\cos\theta_2}{\cos\theta_1}\right)$$

Løsning:

$$\boxed{\begin{aligned} E_{rpo} &= \frac{\alpha-\beta}{\alpha+\beta} E_{ipo} \\ E_{tpo} &= \frac{2}{\alpha+\beta} E_{ipo} \end{aligned}}$$

$$\alpha = \frac{\cos\theta_2}{\cos\theta_1} = \frac{\sqrt{1-\sin^2\theta_2}}{\cos\theta_1} = \frac{\sqrt{1-n_1^2 \sin^2\theta_1 / n_2^2}}{\cos\theta_1}$$

[Kontroll: $\theta_1 = 0 \Rightarrow \alpha = 1 \Rightarrow E_{rpo} = \frac{1-\beta}{1+\beta} E_{ipo}$; OK !]