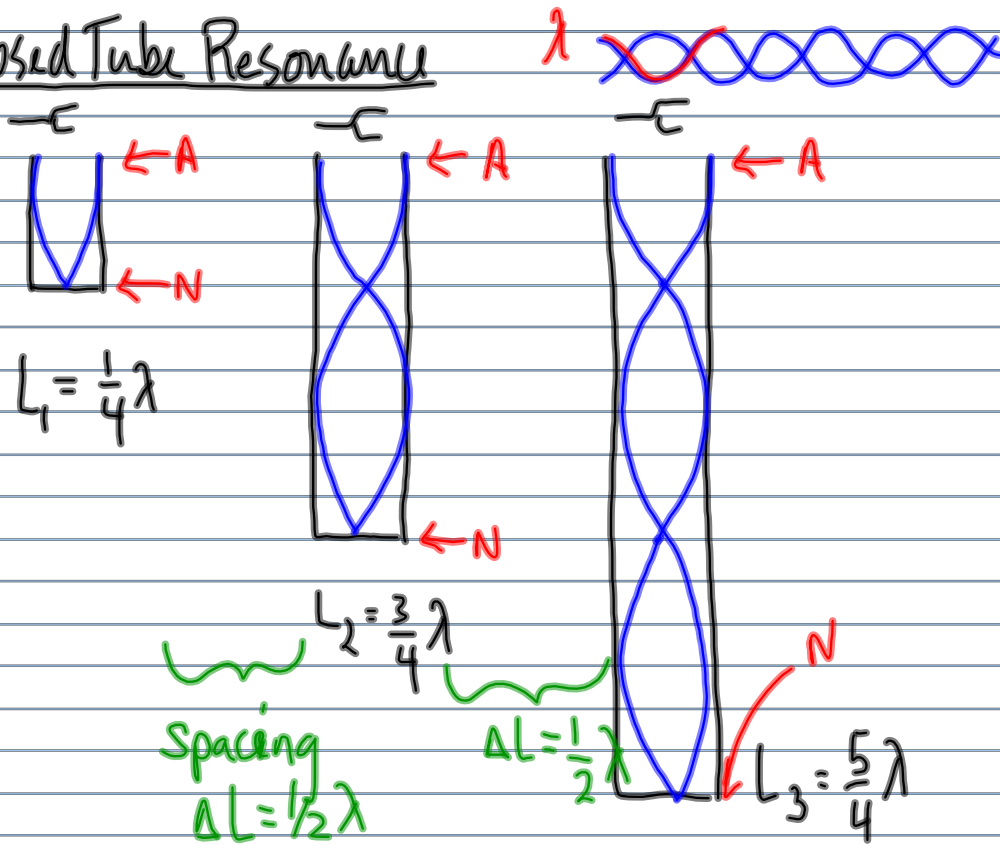
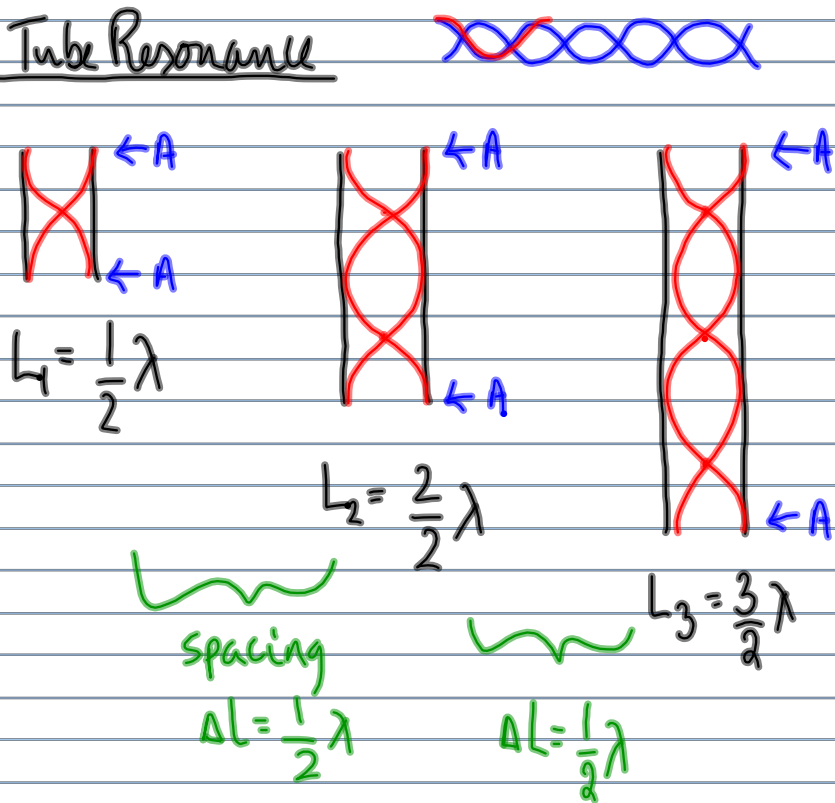


Closed Tube Resonance



Open Tube Resonance



MP/419

$L_1 = 9.0 \text{ cm (closed)}$

$T = 20^\circ\text{C} (v = 343 \text{ m/s})$

a) $\lambda = ?$

b) $L_2 = ? , L_3 = ?$

c) $f = ?$

c) $v = \lambda f$

$(343 \text{ m/s}) = (0.36 \text{ m}) f$

$f = 9.5 \times 10^2 \text{ Hz}$

a) $L_1 = \frac{1}{4} \lambda$

$9.0 \text{ cm} = \frac{1}{4} \lambda$

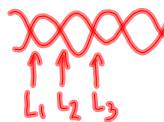
$\lambda = 4(9.0 \text{ cm})$

$\lambda = 36 \text{ cm}$

b) $L_2 = \frac{3}{4} \lambda$

$L_2 = \frac{3}{4} (36 \text{ cm})$

$L_2 = 27 \text{ cm}$



$L_3 = \frac{5}{4} \lambda$

$L_3 = \frac{5}{4} (36 \text{ cm})$

$L_3 = 45 \text{ cm}$

MP/425

$f_1 = 330 \text{ Hz (open)}$

a) $f_2 = ? , f_3 = ?$

b) $v = 344 \text{ m/s}, L_1 = ?$

b) $v = \lambda f$

$(344 \text{ m/s}) = \lambda (330 \text{ Hz})$

$\lambda = 1.04 \text{ m}$

$L_1 = \frac{1}{2} \lambda$

$L_1 = \frac{1}{2} (1.04 \text{ m}) = 0.52 \text{ m}$

a) $f_n = n f_1$

$f_2 = 2 f_1$

$f_2 = 2 (330 \text{ Hz})$

$f_2 = 660 \text{ Hz}$

$f_3 = 3 (330 \text{ Hz})$

$f_3 = 990 \text{ Hz}$

TO DO:

PP/421

MP/426 + PP/427