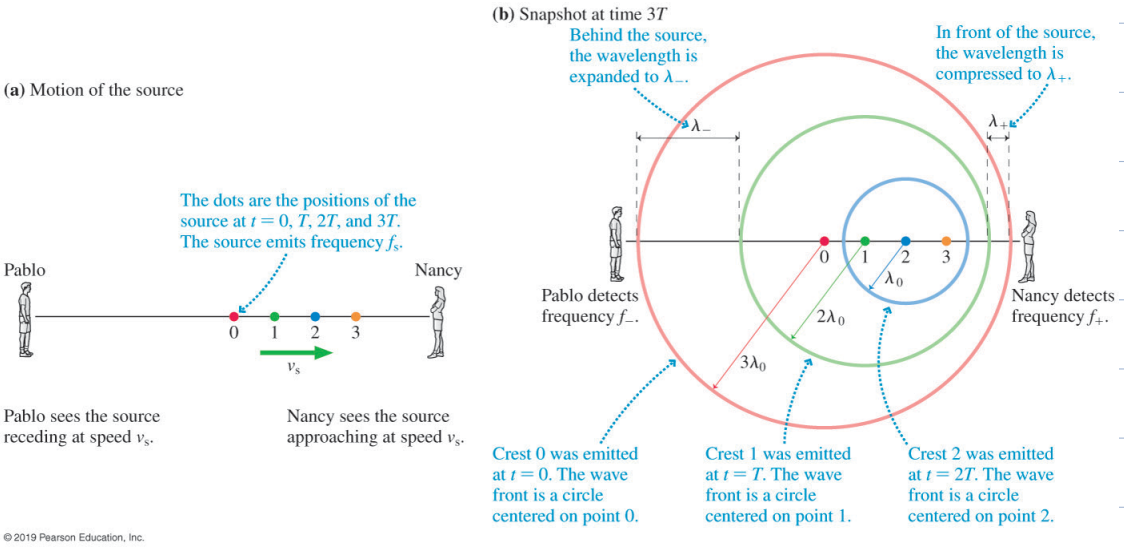
15.7 The Doppler Effect

1) Sound Waves from a moving source



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S = Source

L = listener

f_S = frequency emitted by source

f_L = frequency detected by listener

v_S = speed of the source

v = speed of the waves

For Nancy: $f_L > f_S$

For Pablo: $f_L < f_S$

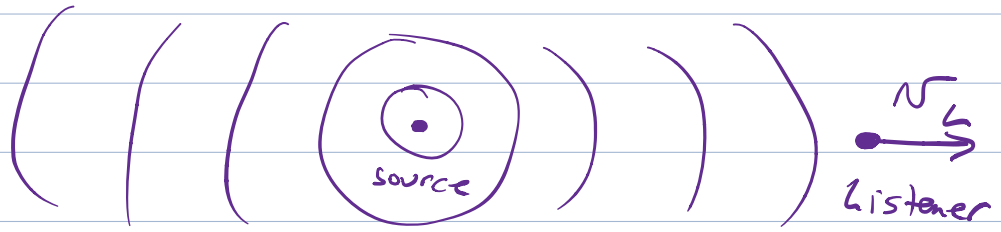
Moving Source:

$$f_L = \left(\frac{v}{v \pm v_s} \right) f_s$$

Which do you pick - + or - ?
Pick - if $f_L > f_s$ (approaching)
Pick + if $f_L < f_s$ (receeding)

Moving Listener

$$f_L = \left(\frac{v \pm v_L}{v} \right) f_s$$



Which do you pick - + or - ?
Pick + if $f_L > f_s$ (approaching)
Pick - if $f_L < f_s$ (receeding)

Example: Ch15 - doppler - 1