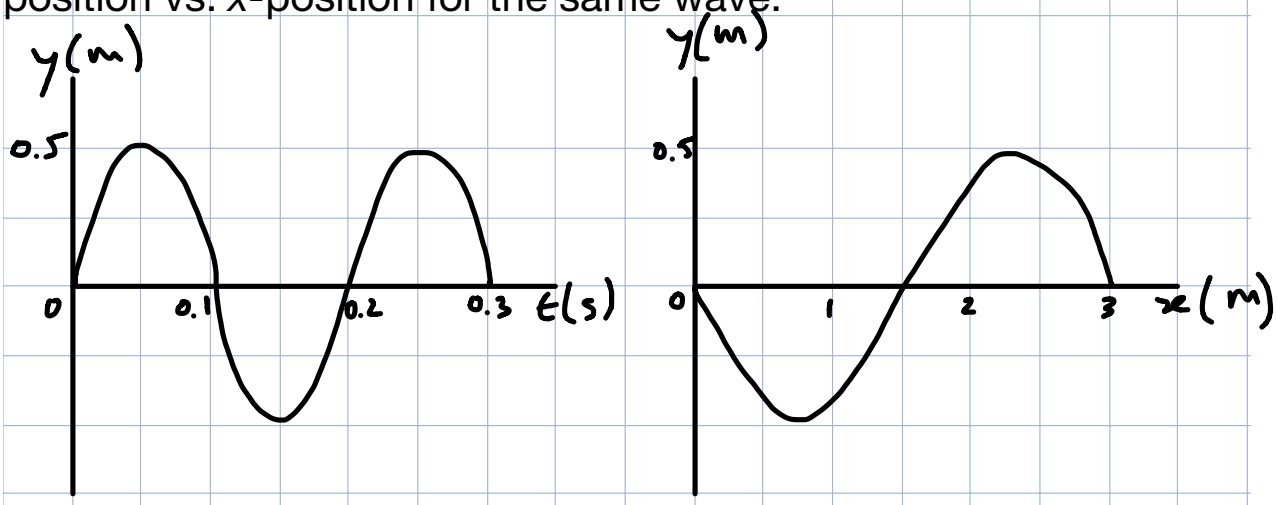
The graph on the left shows the vertical position of a particle in the medium with respect to time. The graph on the right shows the *y*-position vs. *x*-position for the same wave.

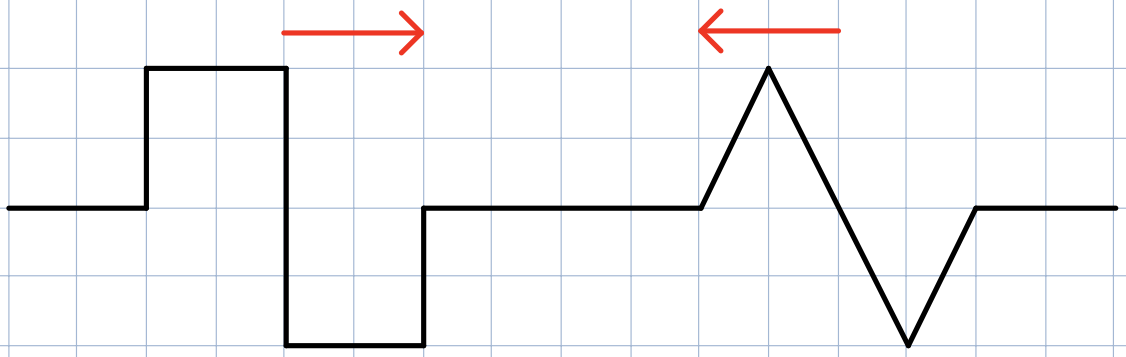


Use the graphs to determine:

a) amplitude b) wavelength c) period

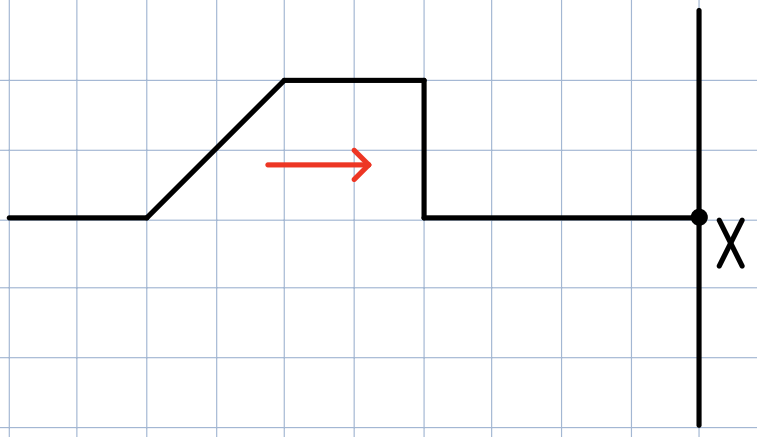
d) frequency e) wave speed

Two wave pulses are propagating along a string toward each other.



Draw the shape of the string when
a) the pulses overlap by half of the length of each pulse.
b) the pulses completely overlap
c) the pulses have passed each other

A pulse travels along a string at a speed of 1 unit per second and reflects upon reaching *X*.

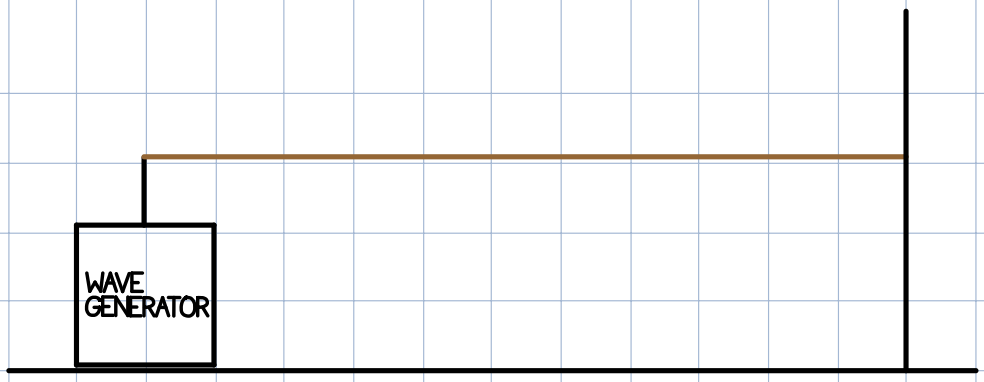


Draw the pulse after six seconds if *X* is a...

a) fixed end

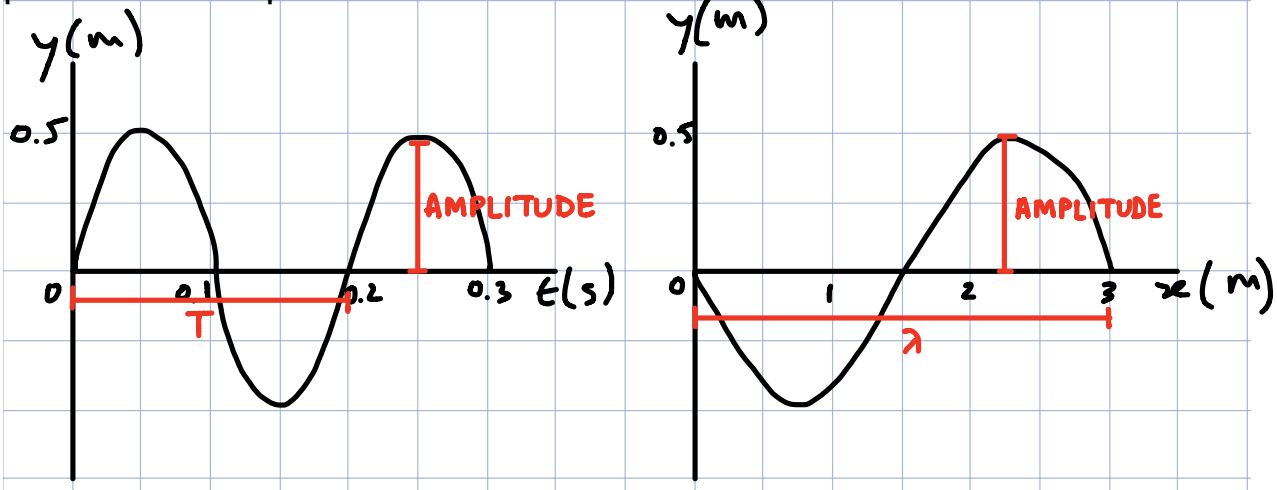
b) free end

A standing wave is created by a wave generator in a string of length 2.0 m



The frequency of the third harmonic is found to be 360 Hz.
a) What is the speed of the waves?
b) What would be the frequencies of the second and fourth harmonics?
c) If the string is tightened, the wave speed increases. Does the frequency of the third harmonic increase, decrease or stay the same?

The graph on the left shows the vertical position of a particle in the medium with respect to time. The graph on the right shows the *y*-position vs. *x*-position for the same wave.



Use the graphs to determine:

a) amplitude b) wavelength c) period

d) frequency e) wave speed

a) 0.5 m

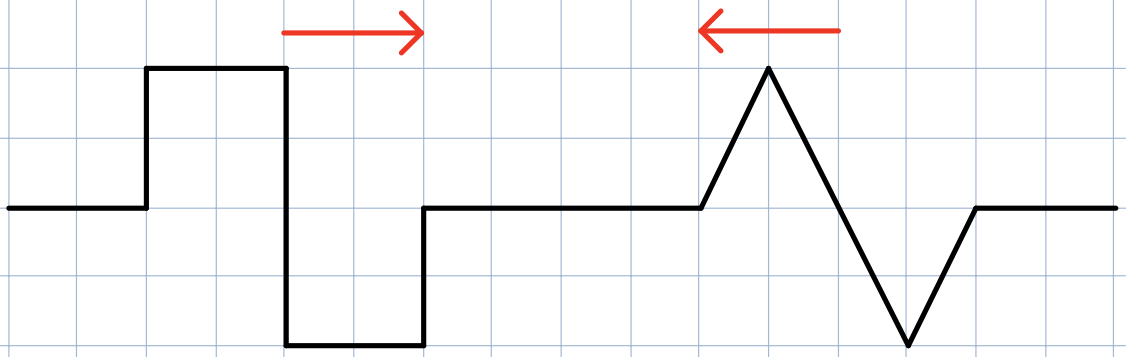
b) 3m

c) 0.2 s

d) $f = \frac{1}{T} = \frac{1}{0.2} = \boxed{5\ Hz}$

e) $v = \lambda f = (3)(5) = \boxed{15\ \frac{m}{s}}$

Two wave pulses are propagating along a string toward each other.



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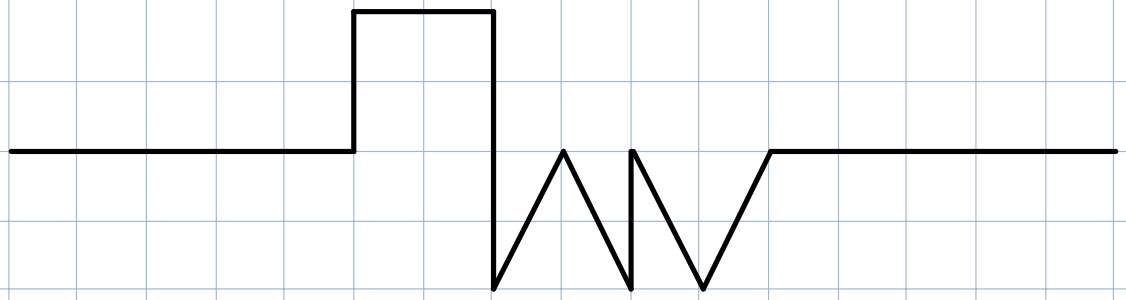
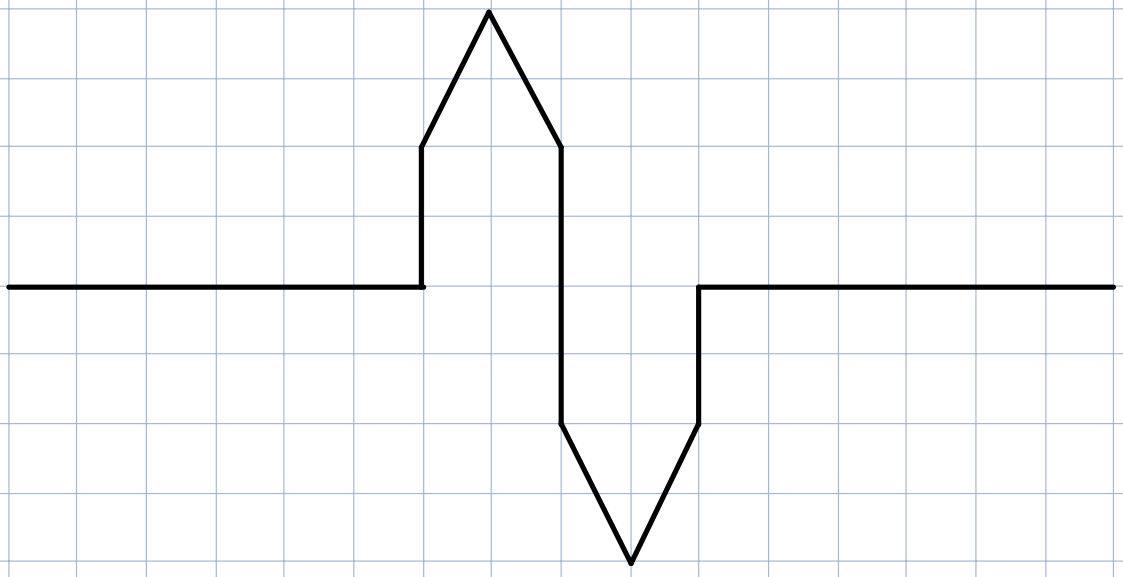
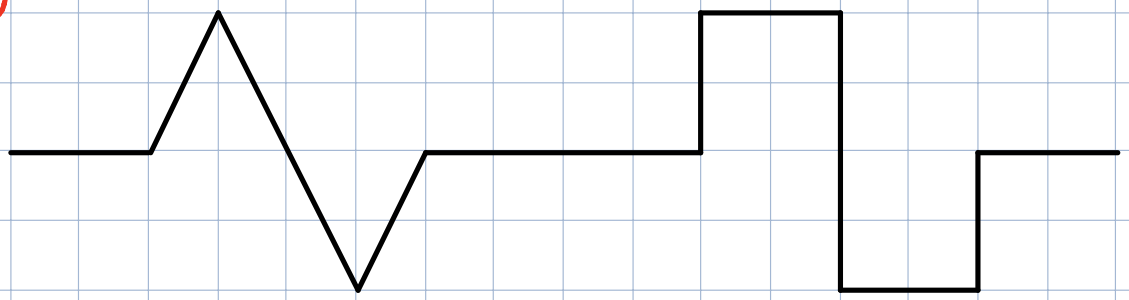
a)



b)



ء)



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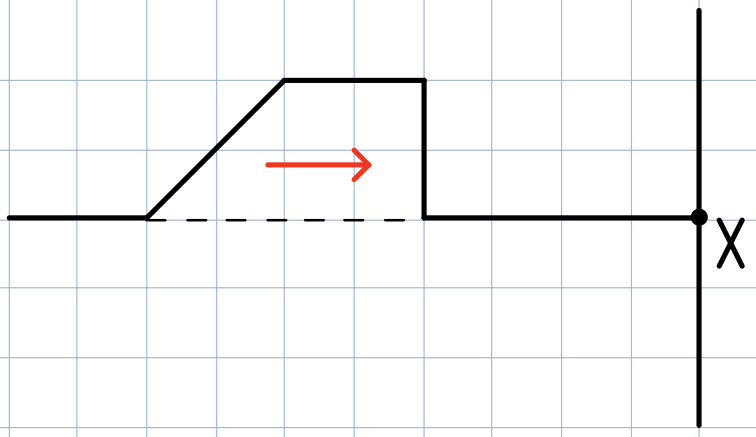

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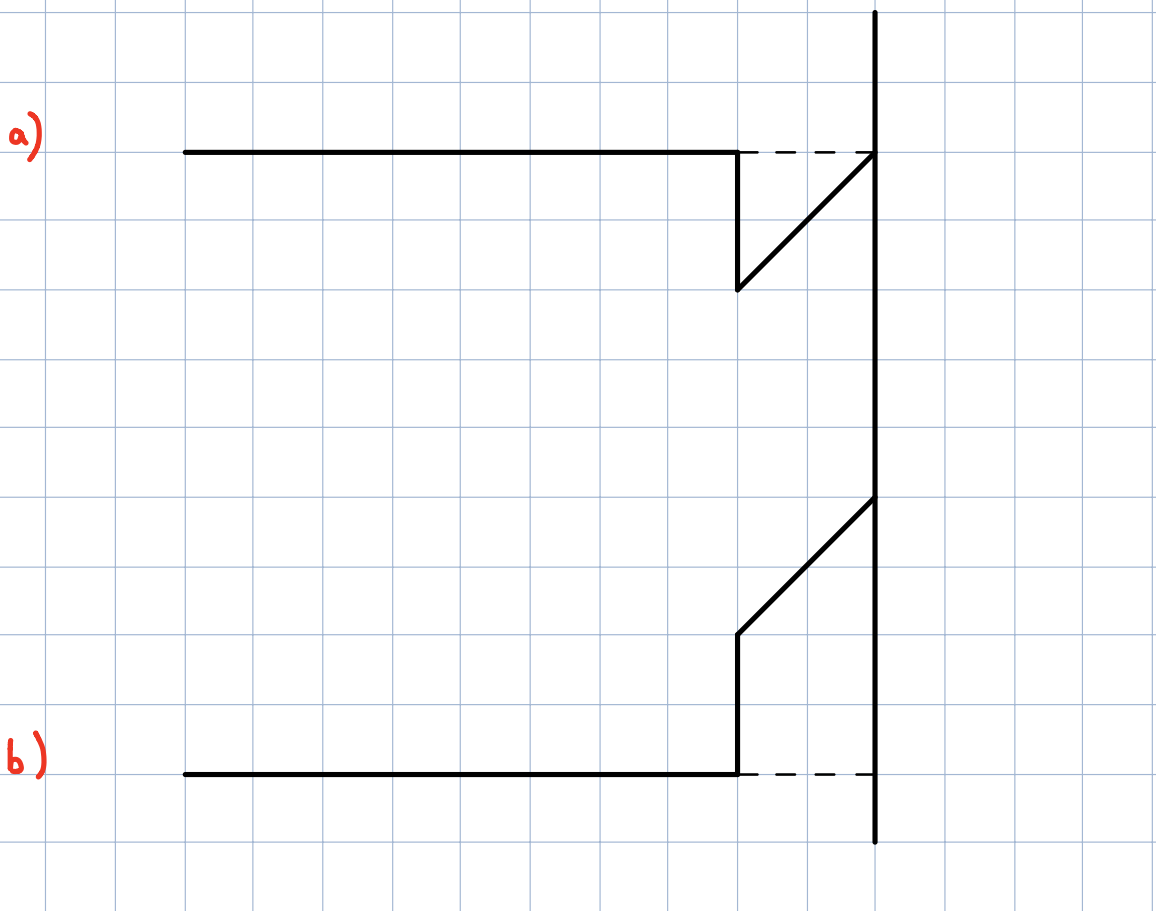

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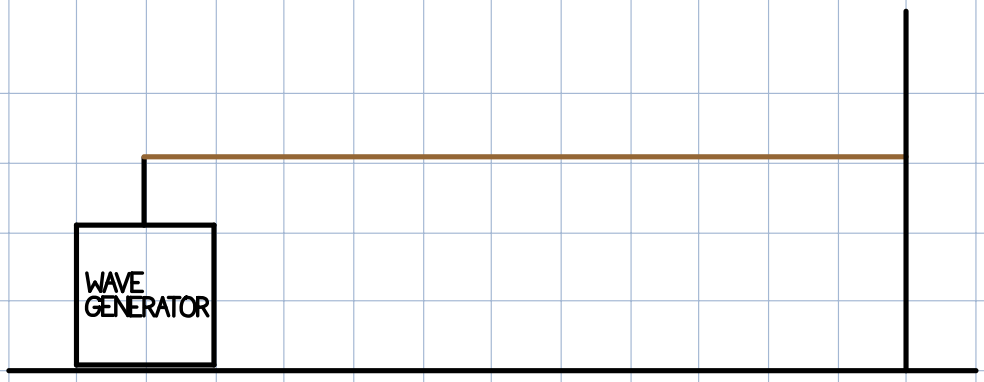

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a) $\lambda_3 = \frac{2}{3}L = \frac{2}{3}(2.0) = 1.\overline{3}$ m

$f_3 = 360$ Hz

$v = \lambda f$

$= (1.\overline{3})(360)$

$= \boxed{480 \frac{m}{s}}$

b) $f_3 = 3f_1$

$f_1 = \frac{1}{3}f_3 = \frac{1}{3}(360) = 120$ Hz

$f_2 = 2f_1 = 2(120) = \boxed{240 \text{ Hz}}$

$f_4 = 4f_1 = 4(120) = \boxed{480 \text{ Hz}}$

c) **INCREASE**

$f_3 = \frac{v}{\lambda_3}$ λ_3 STAYS THE SAME (I.E. $\frac{2}{3}L$) SO IF v INCREASES, SO DOES f_3.