

# May 3, Week 15

Today: Chapter 15: Waves

Homework Assignment #11 - Due May 3.

**Mastering Physics:** 7 questions from chapters 13 and 14.

**Mastering Physics:** 13.77

Exam Review: Tuesday at 5:00PM in 114 Regener Hall.

Office Hours in Regener Hall, Monday and Tuesday, whenever not reviewing.

See practice exam on website for details about final exam's format.

# Sinusoidal Waves

The simplest type of wave is one for a frictionless and infinitely-long medium in which each point of the medium undergoes Simple Harmonic Motion.

# Sinusoidal Waves

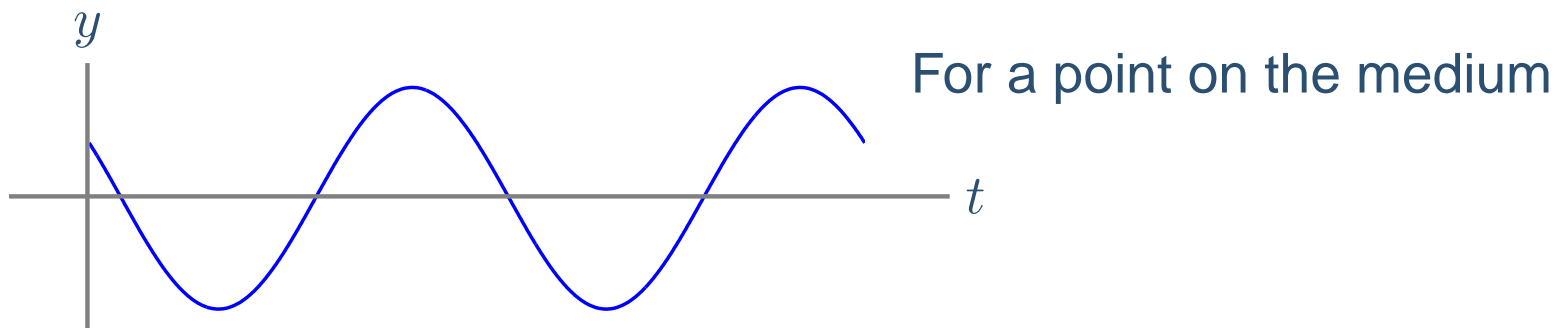
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For a point on the medium

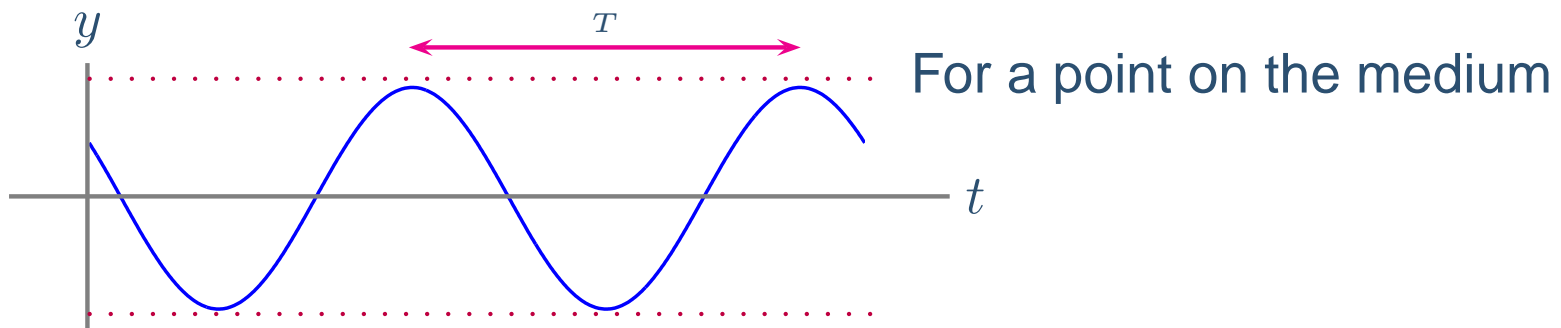
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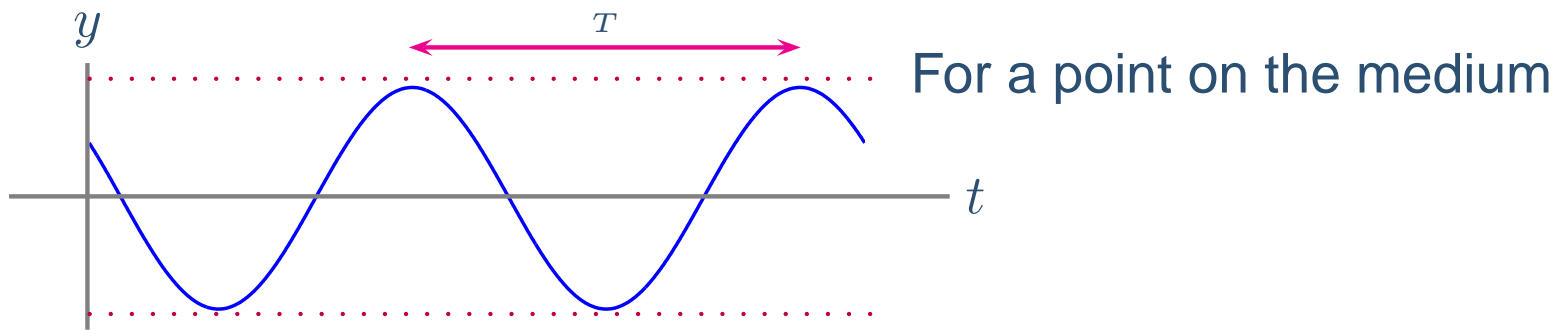
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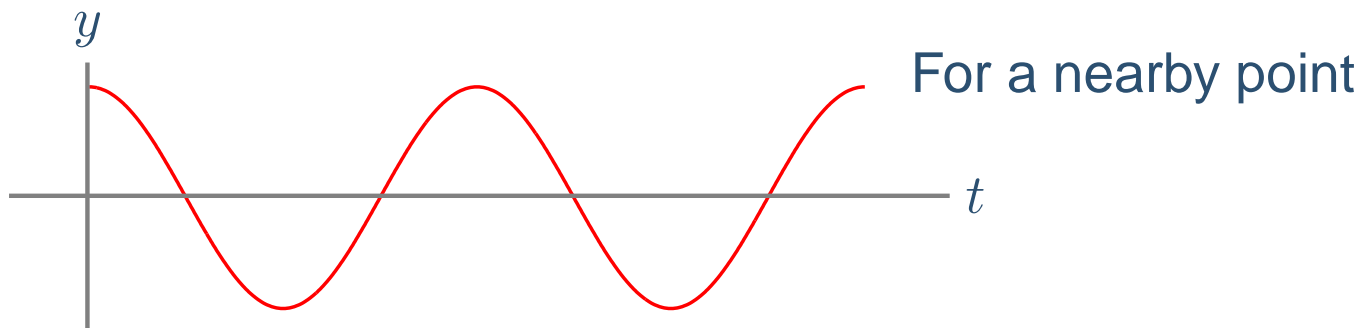
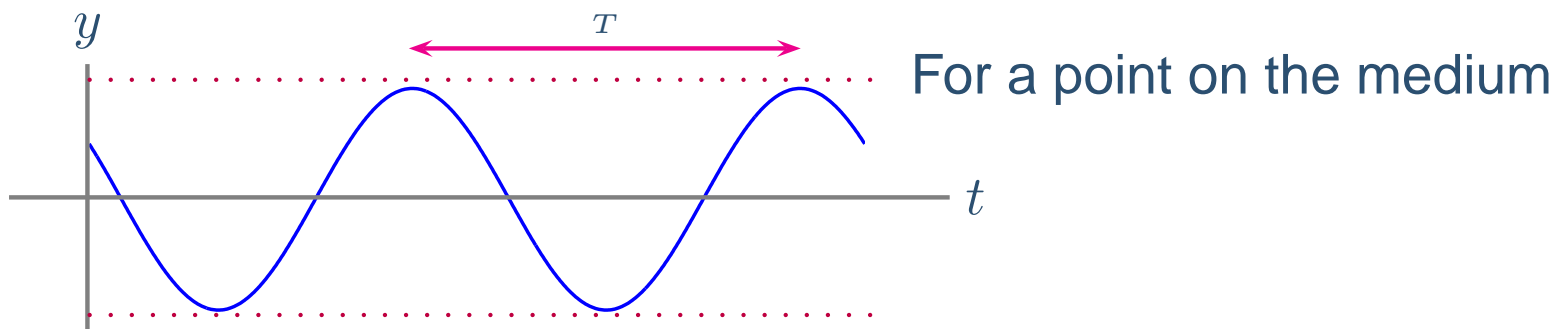
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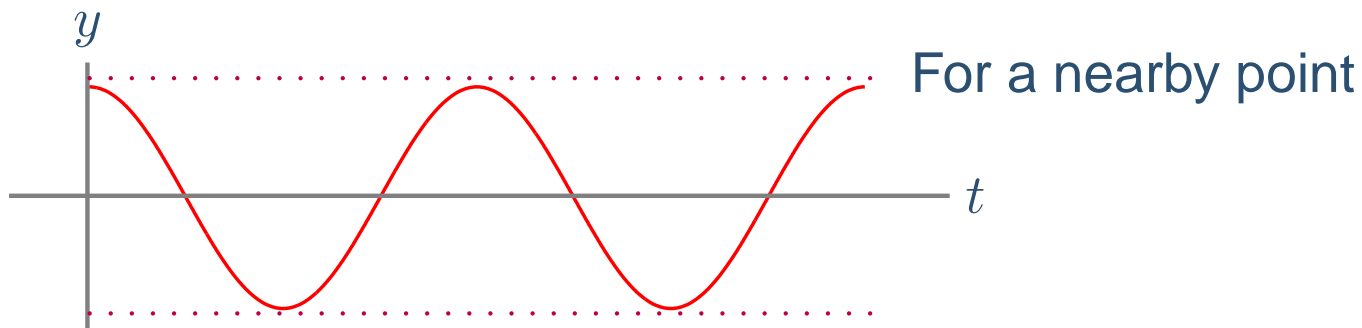
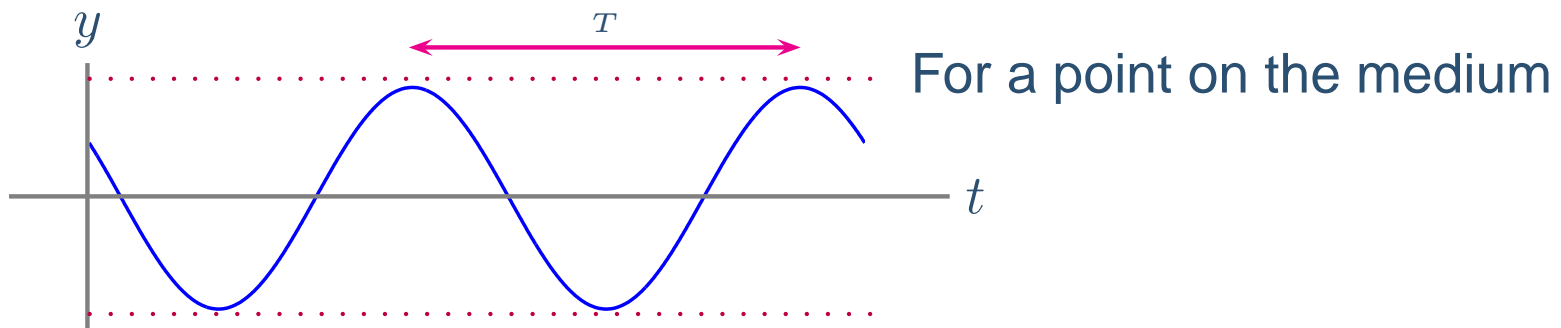
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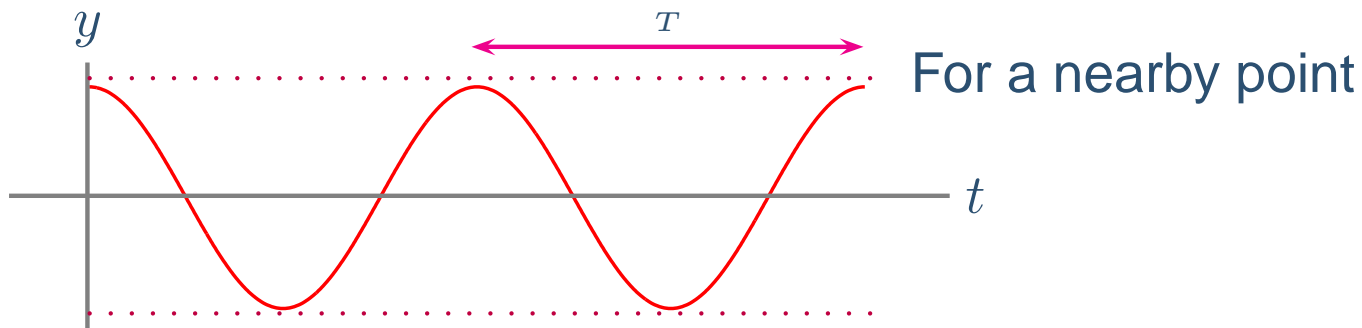
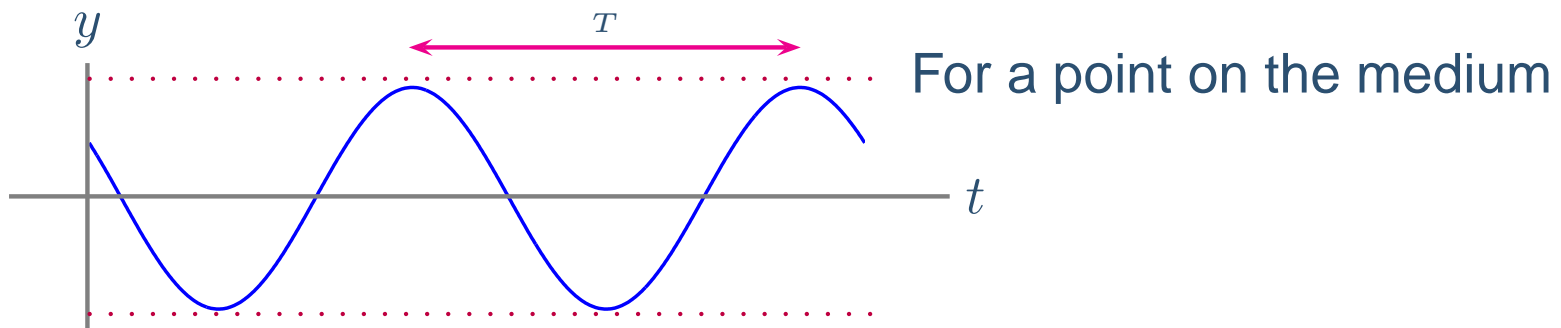
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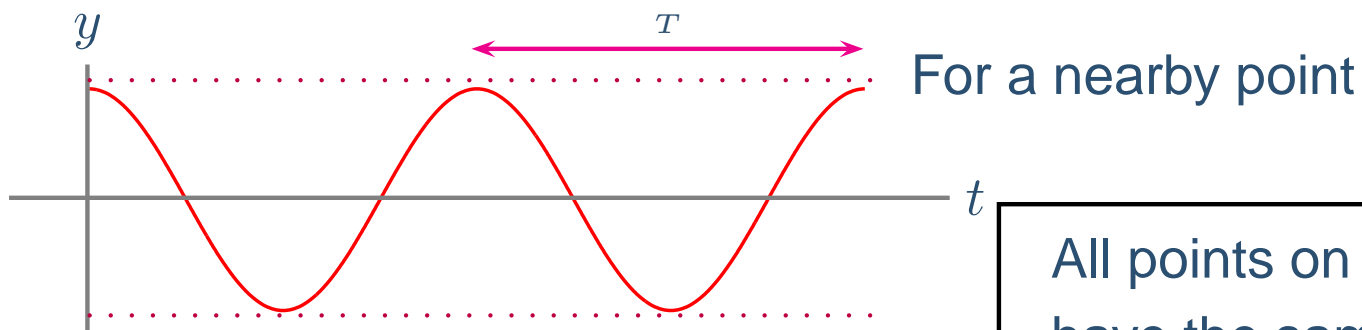
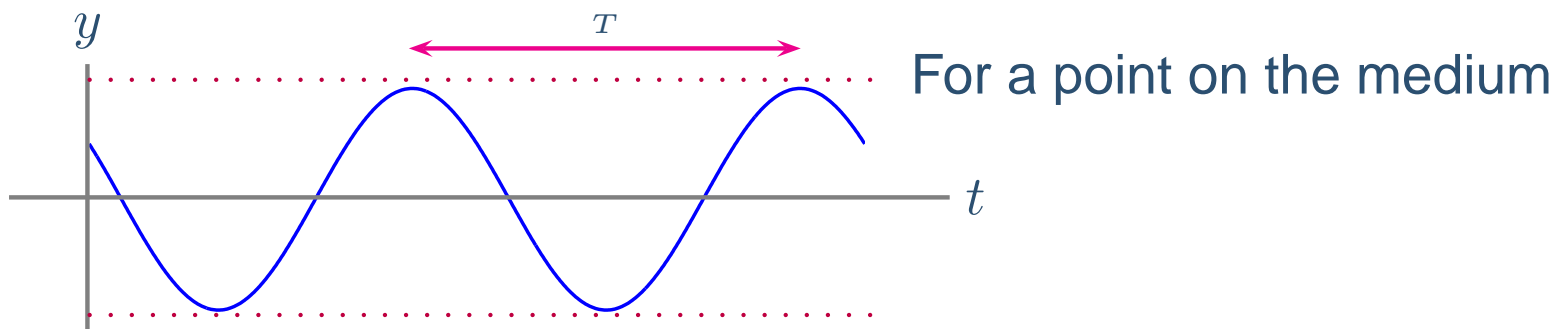
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# Sinusoidal Waves

The simplest type of wave is one for a frictionless and infinitely-long medium in which each point of the medium undergoes Simple Harmonic Motion.



All points on the medium  
have the same period

# Wavelength

While points near each other on the medium are not in phase, over some distance there are synchronized points.

# Wavelength

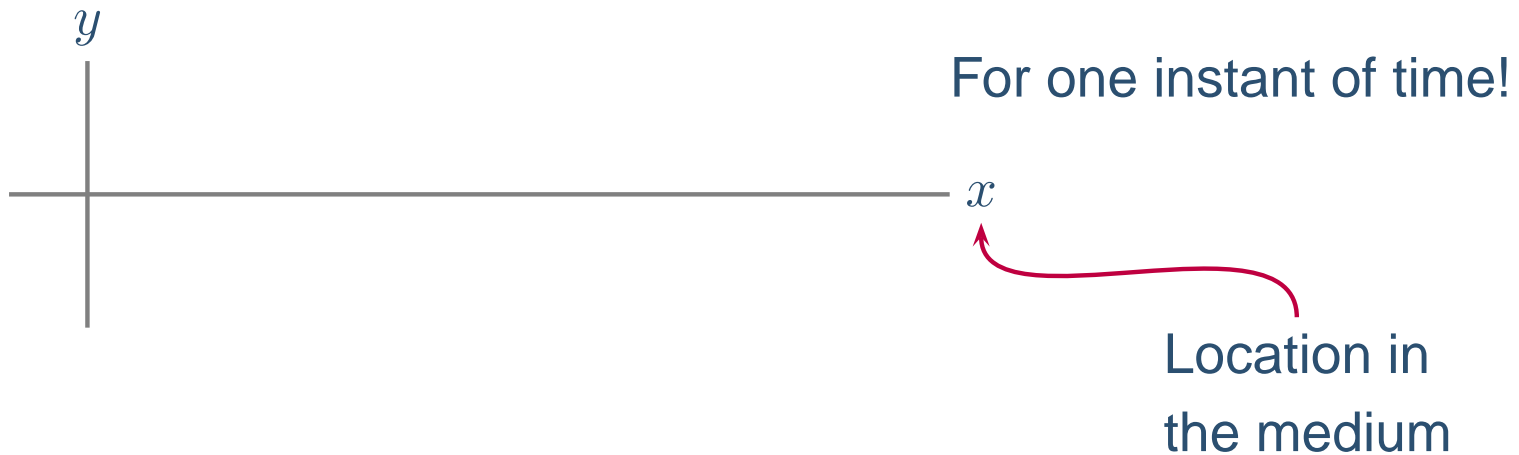
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For one instant of time!

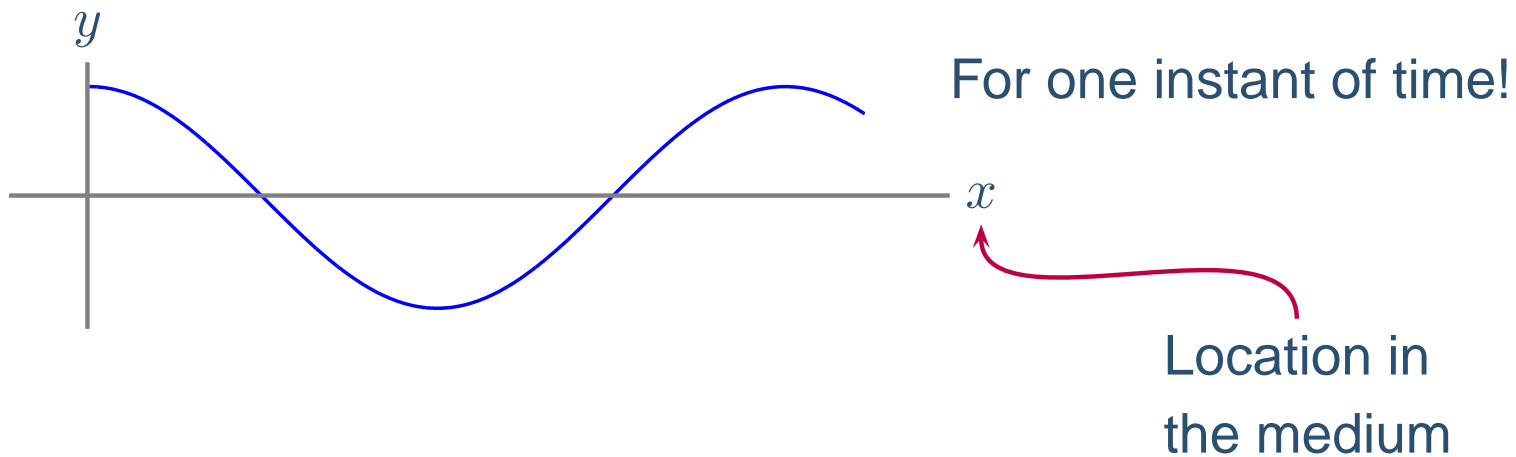
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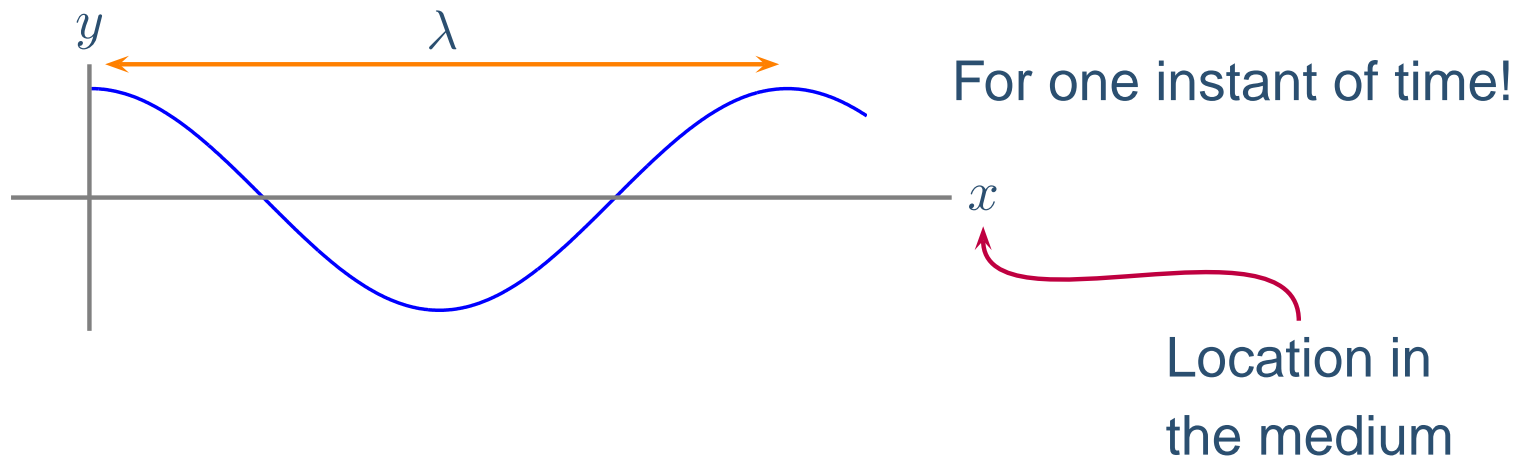
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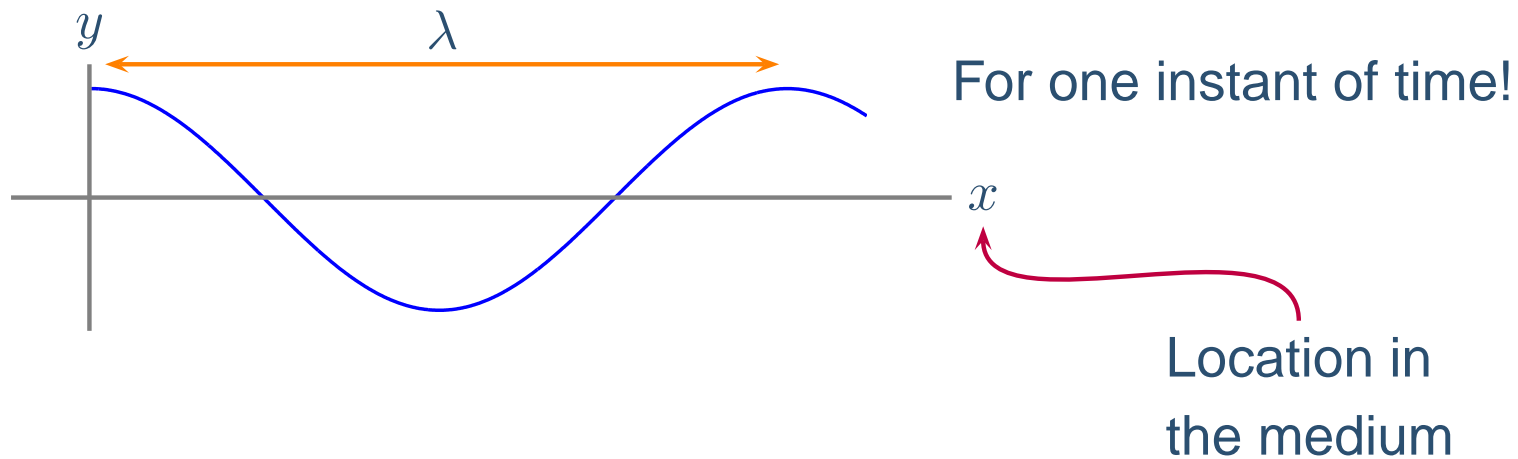
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Wavelength:  $\lambda$     Units:  $m$

- Distance between points in the medium that are in phase

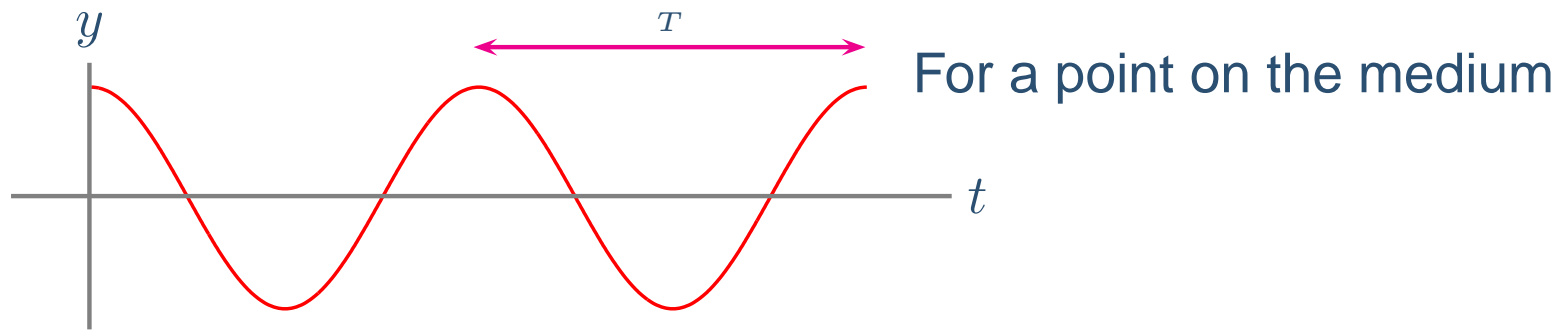


# Wave Speed

Wave Speed,  $v$ : The rate at which the energy propagates.

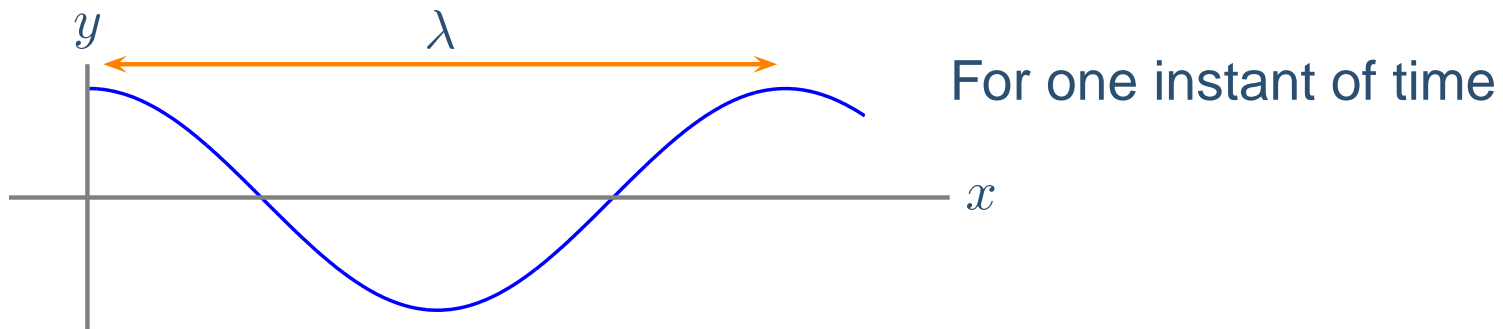
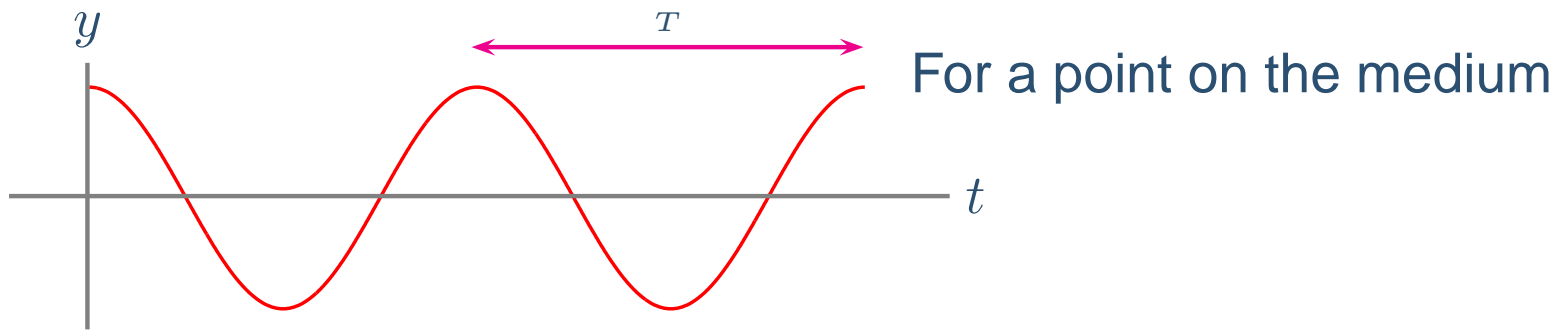
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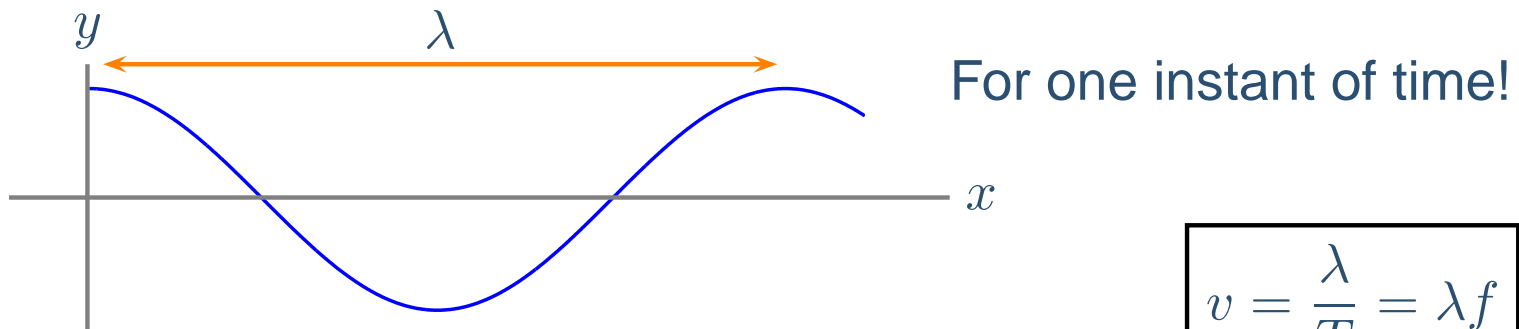
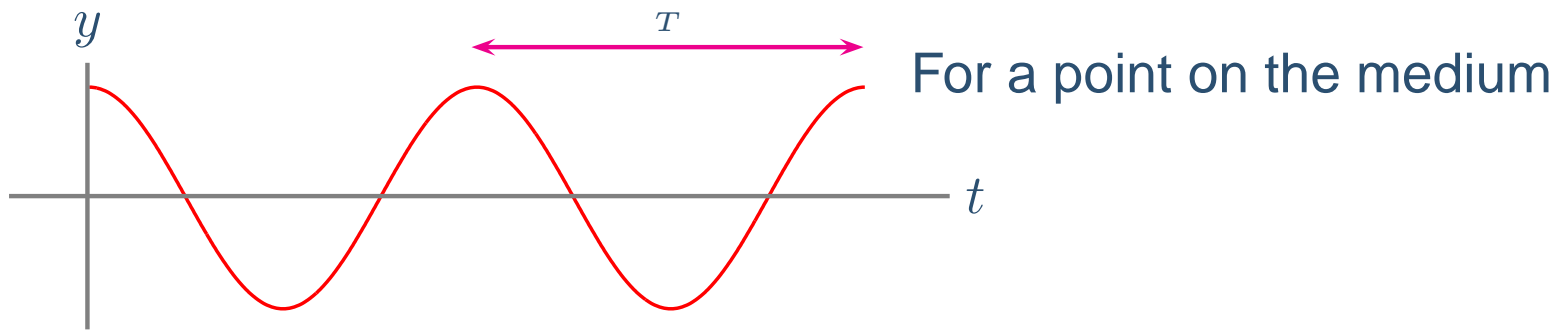
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$$v = \frac{\lambda}{T} = \lambda f$$