June 30, Week 5

Today: Chapter 6, Circular Motion

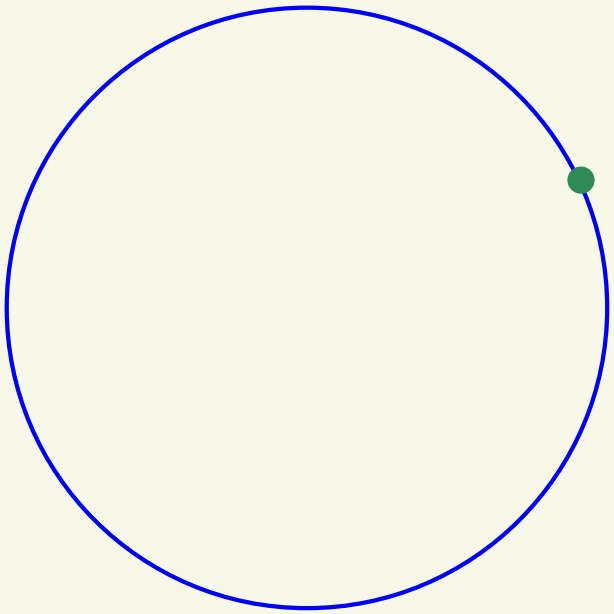
Homework Assignment #5 - Due Monday, July 7 at 5:00PM.

No office hours on Friday.

Tomorrow, we will start chapter 9.

Angular Velocity

The rate at which a particle circles is given by its angular velocity, ω.



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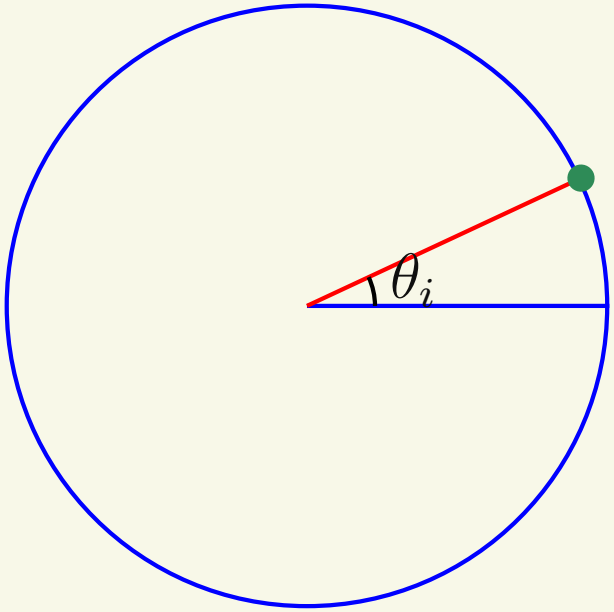

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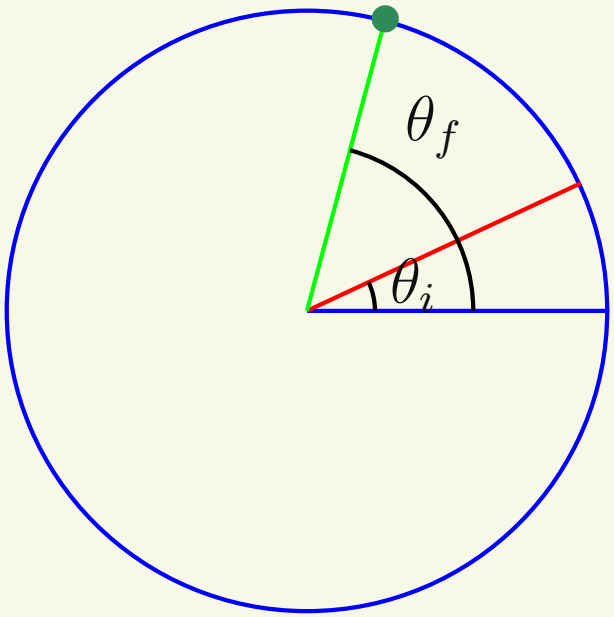

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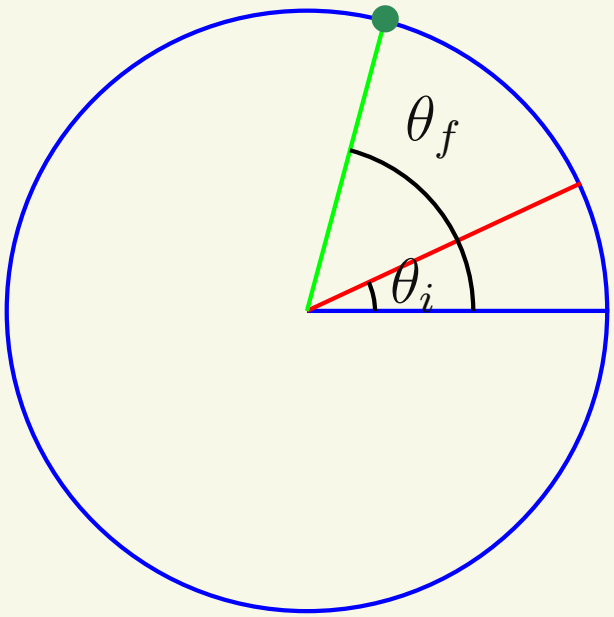

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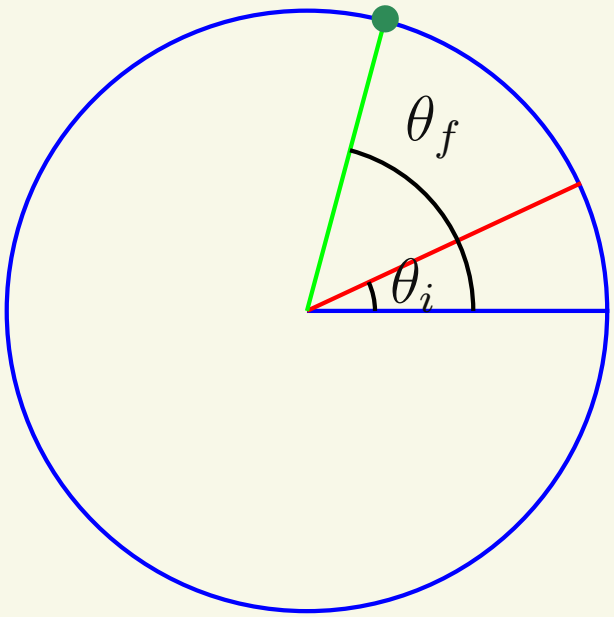

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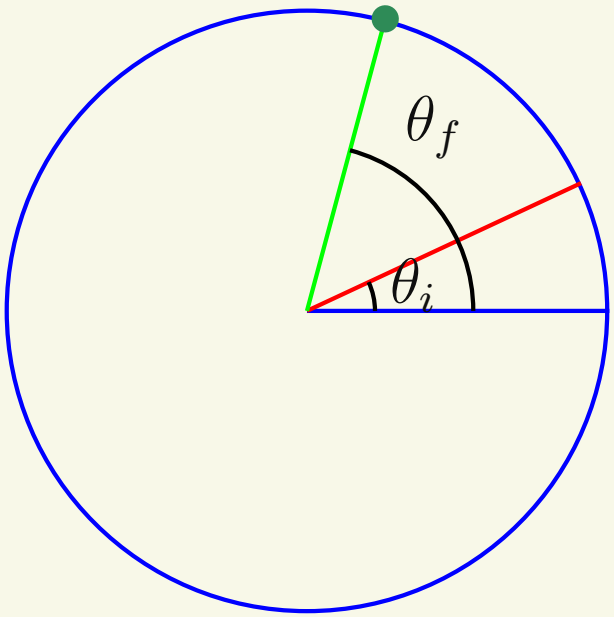

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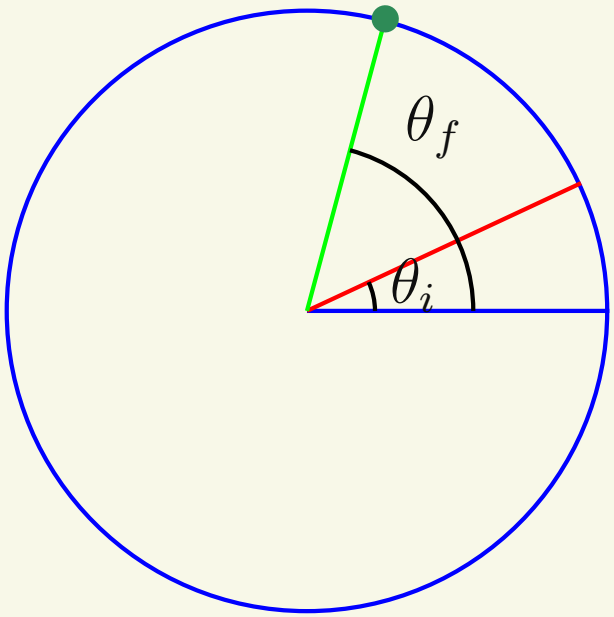

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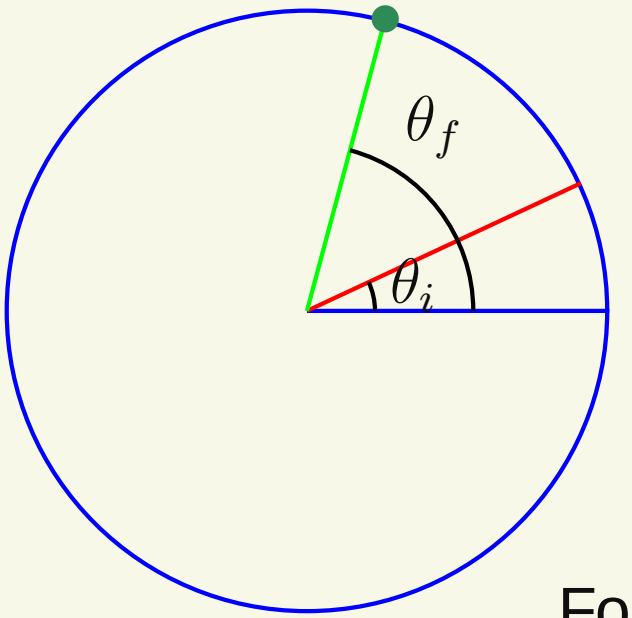

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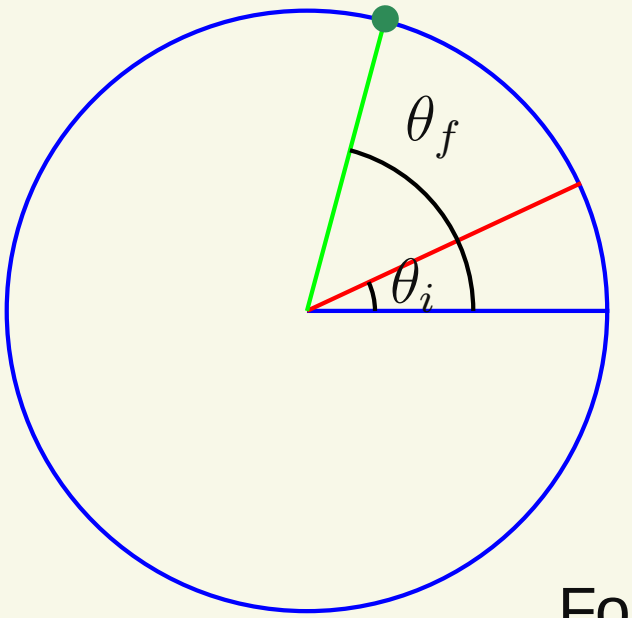

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By convention, ω is positive for counter-clockwise motion

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Related to angular velocity are period and frequency.

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Unit = second (s.)

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Period, T - time for one revolution

Unit = second (s.)

Frequency, f - how many revolutions per unit of time

Unit = Hertz (Hz).

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It now becomes important to distinguish angular velocity (ω) from linear velocity (v).

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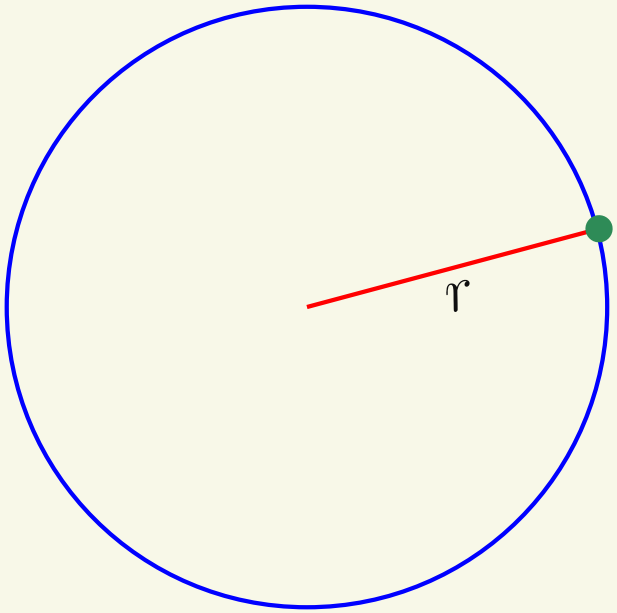

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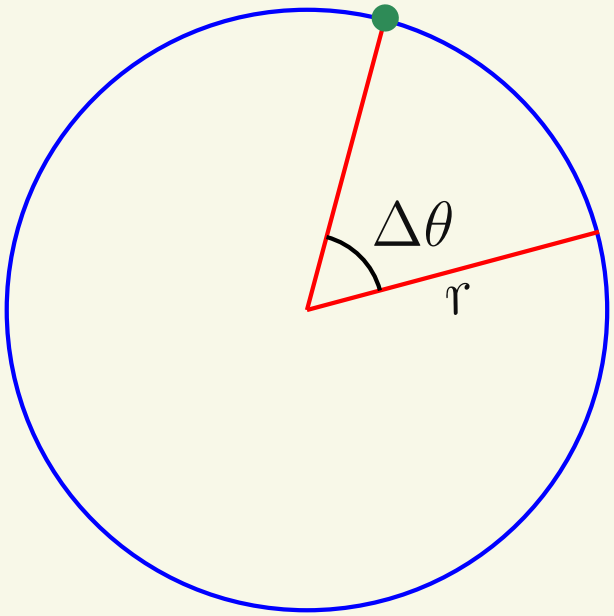

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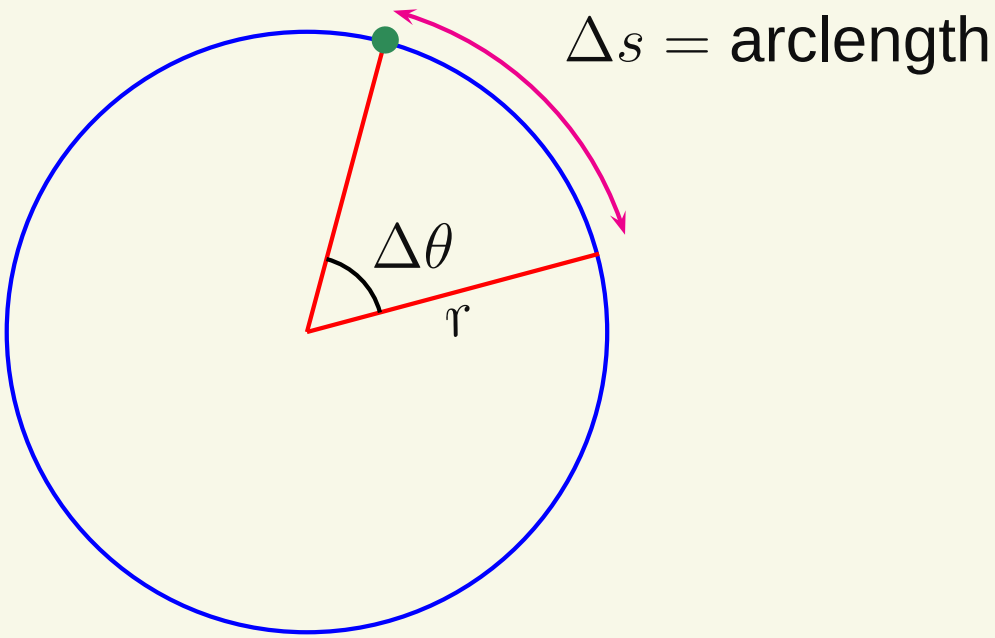

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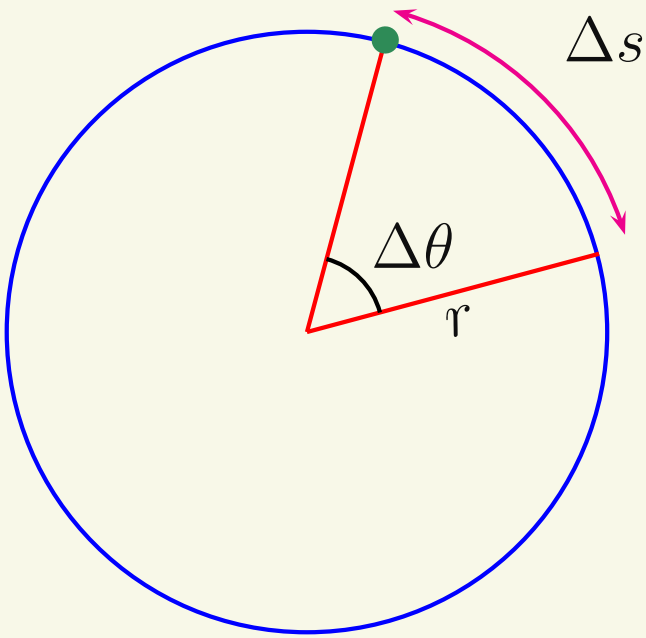

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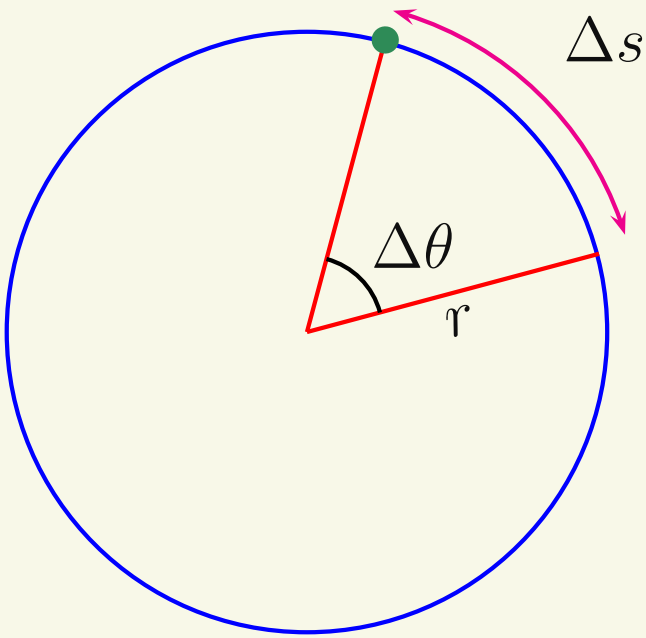

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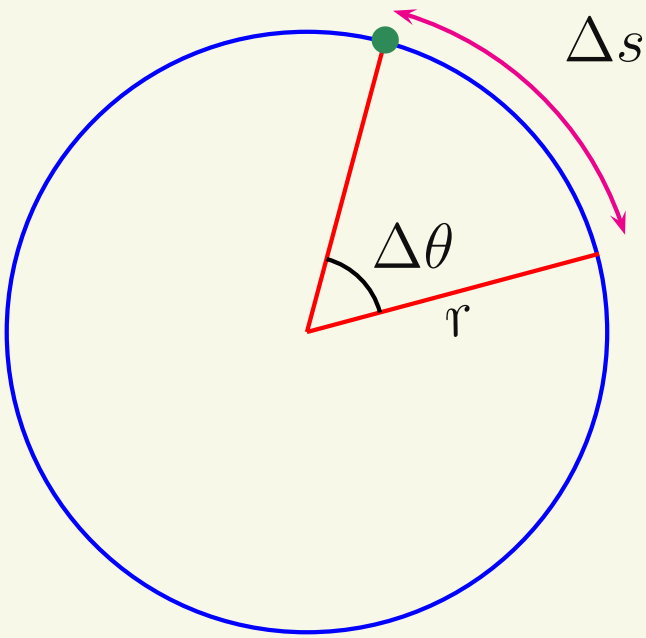

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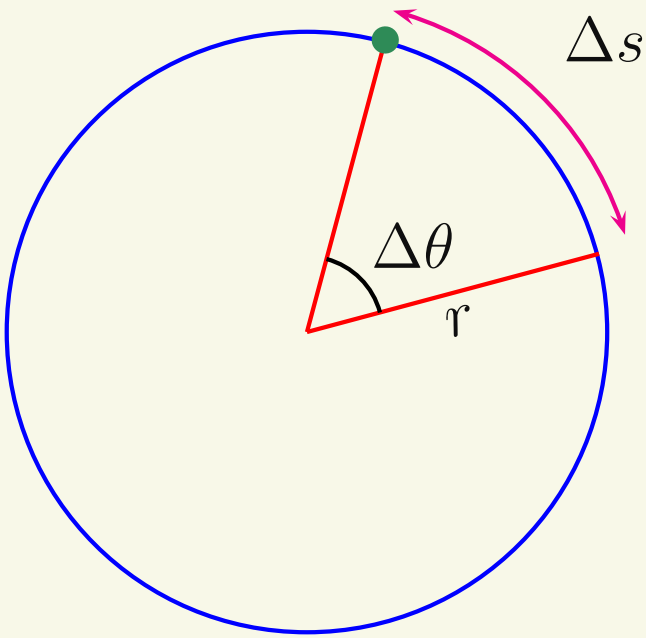

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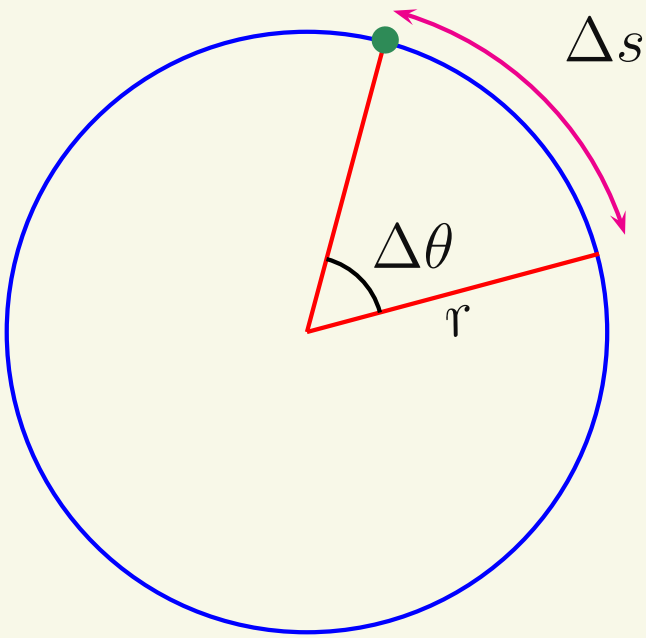

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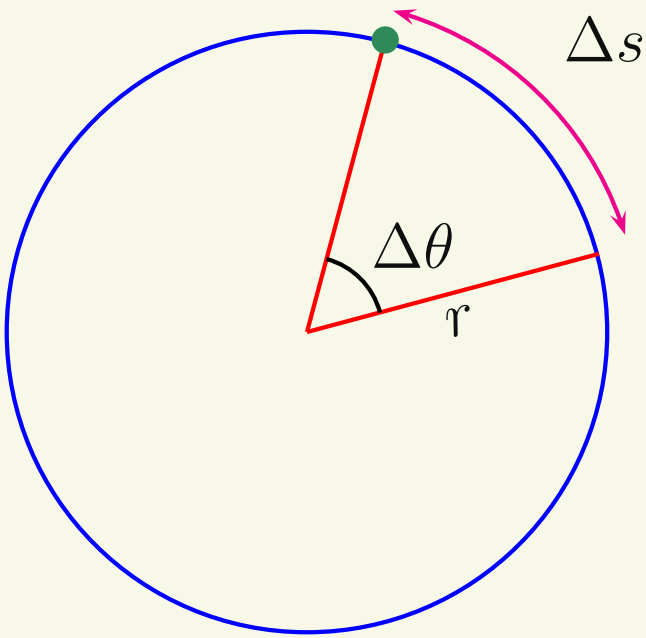

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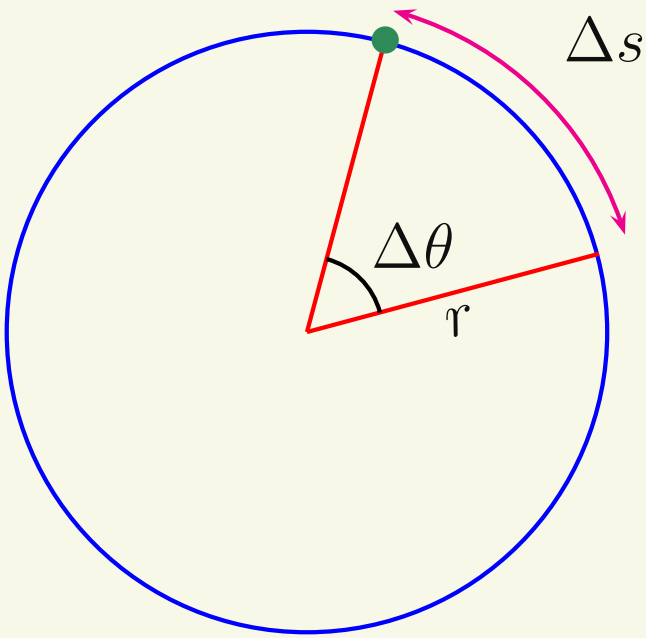

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ω must be in rad/s

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Objects in circular motion must have an inwards acceleration in order to change direction.

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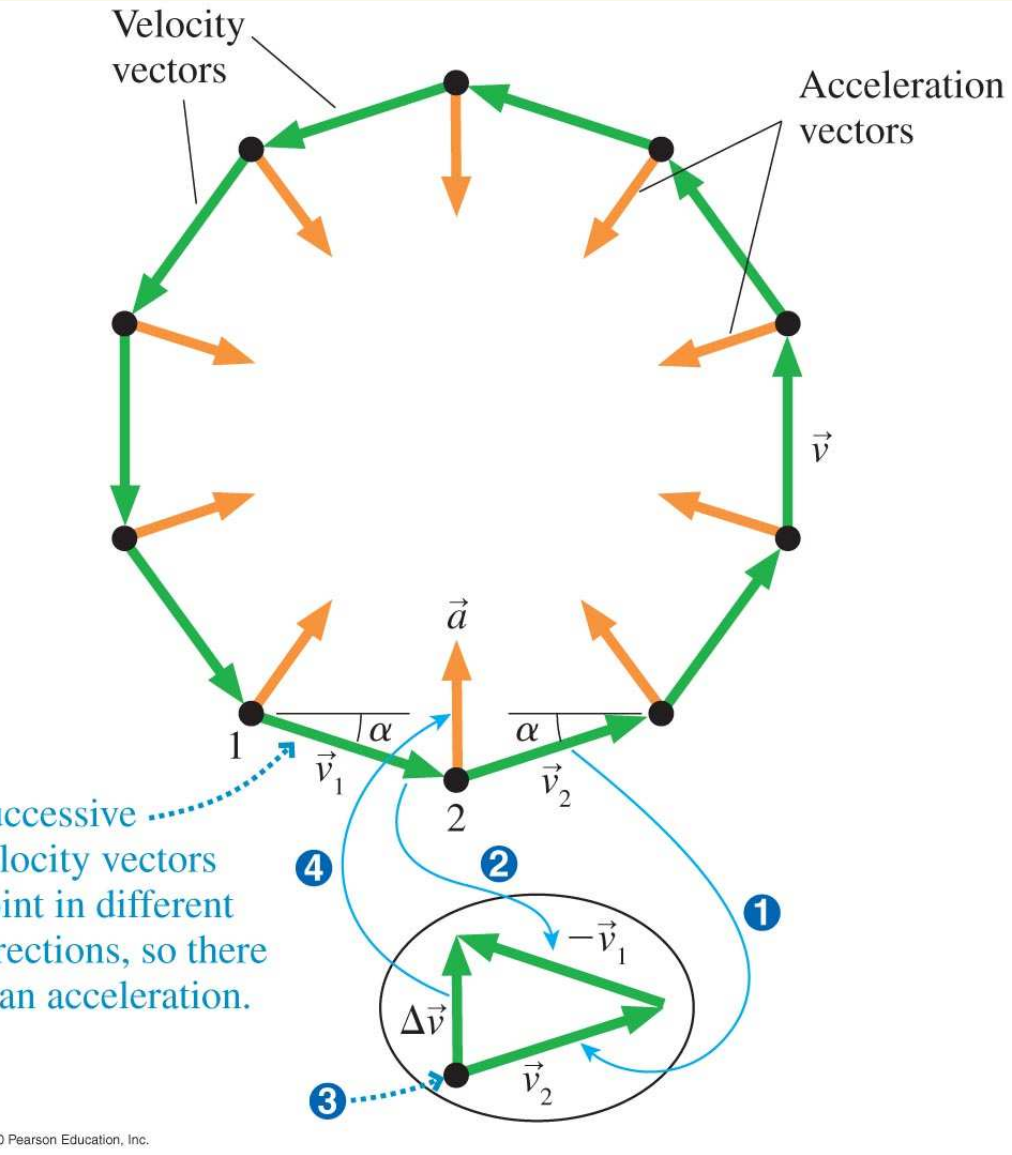

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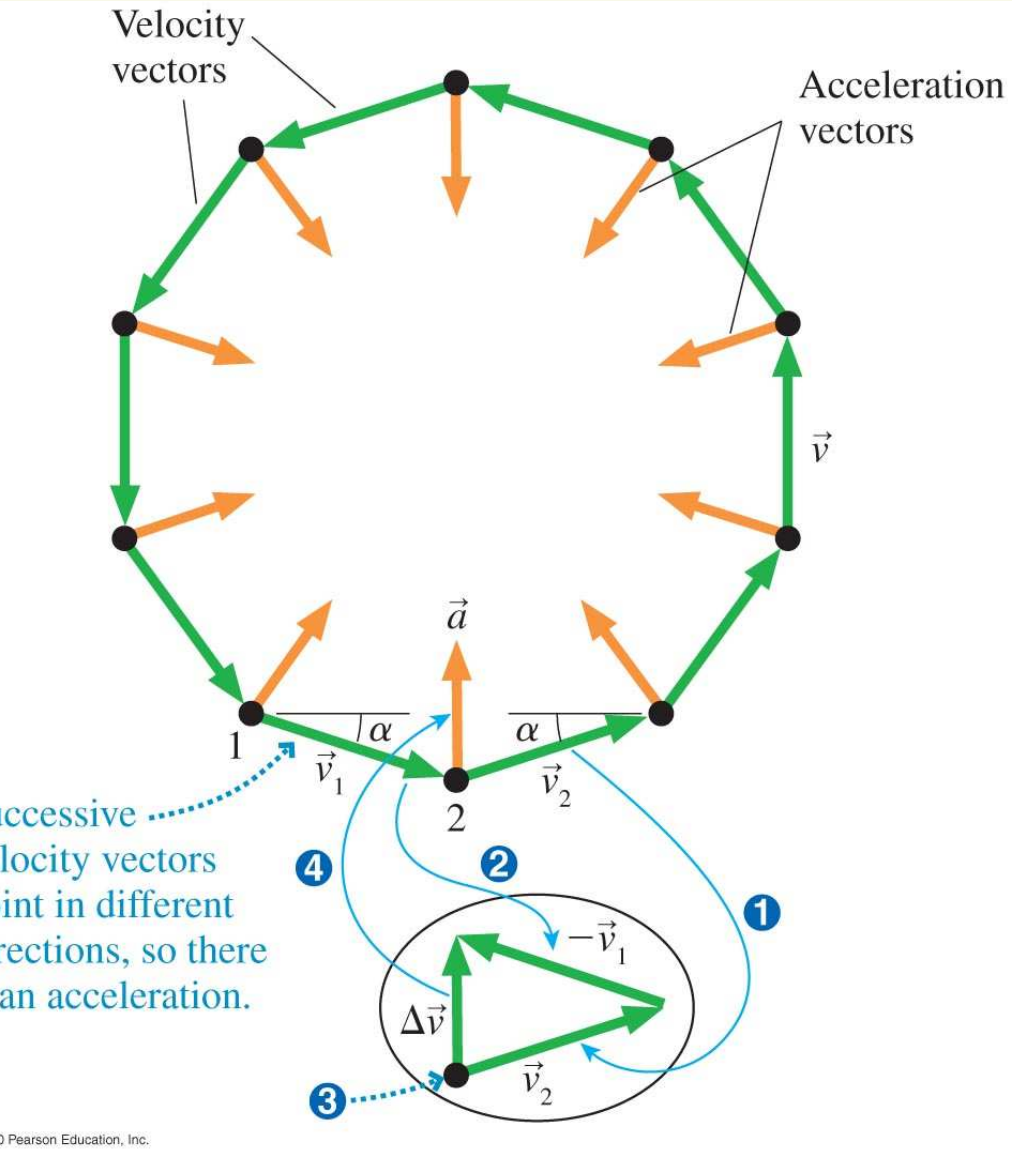

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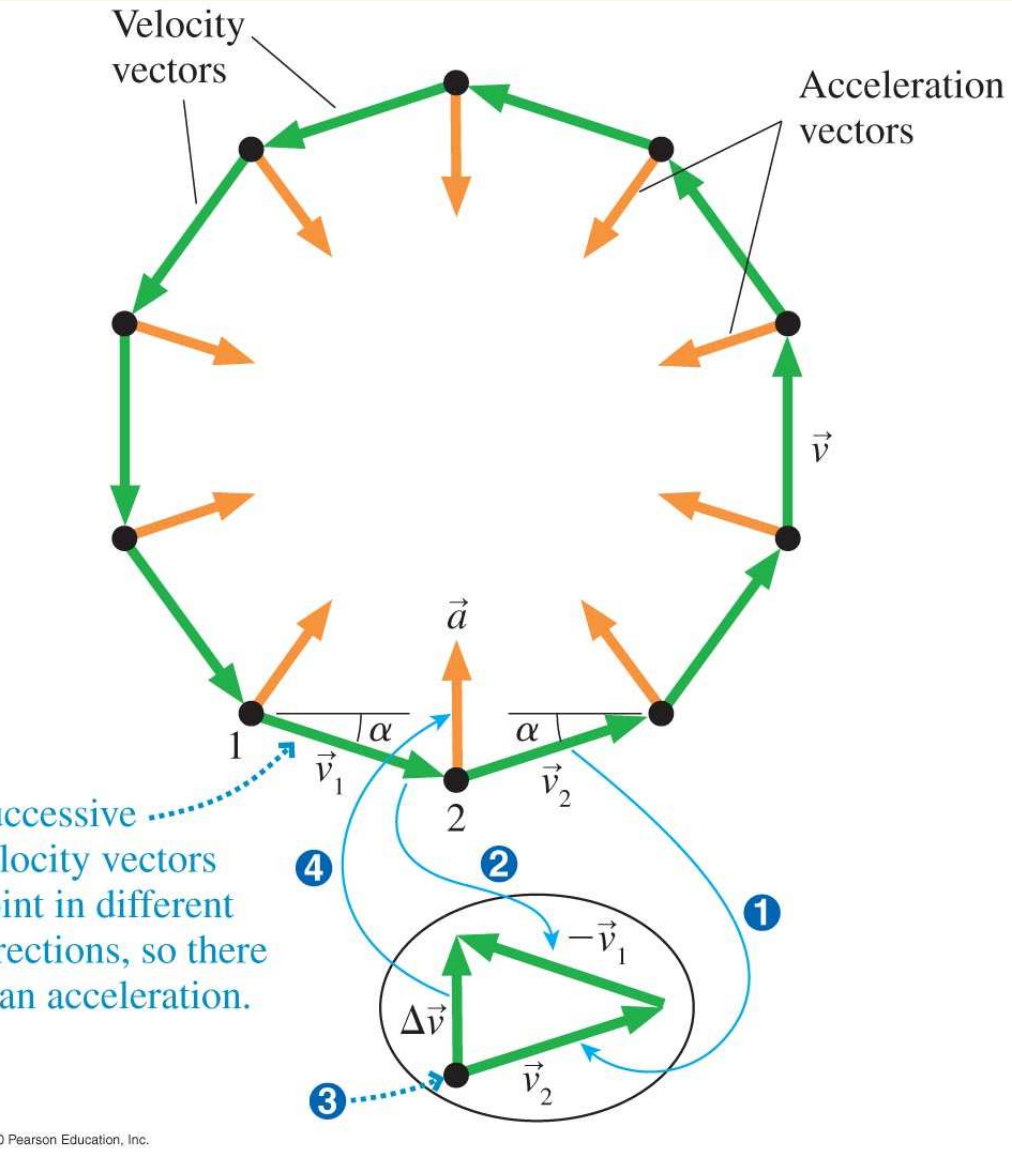

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Section 3.8

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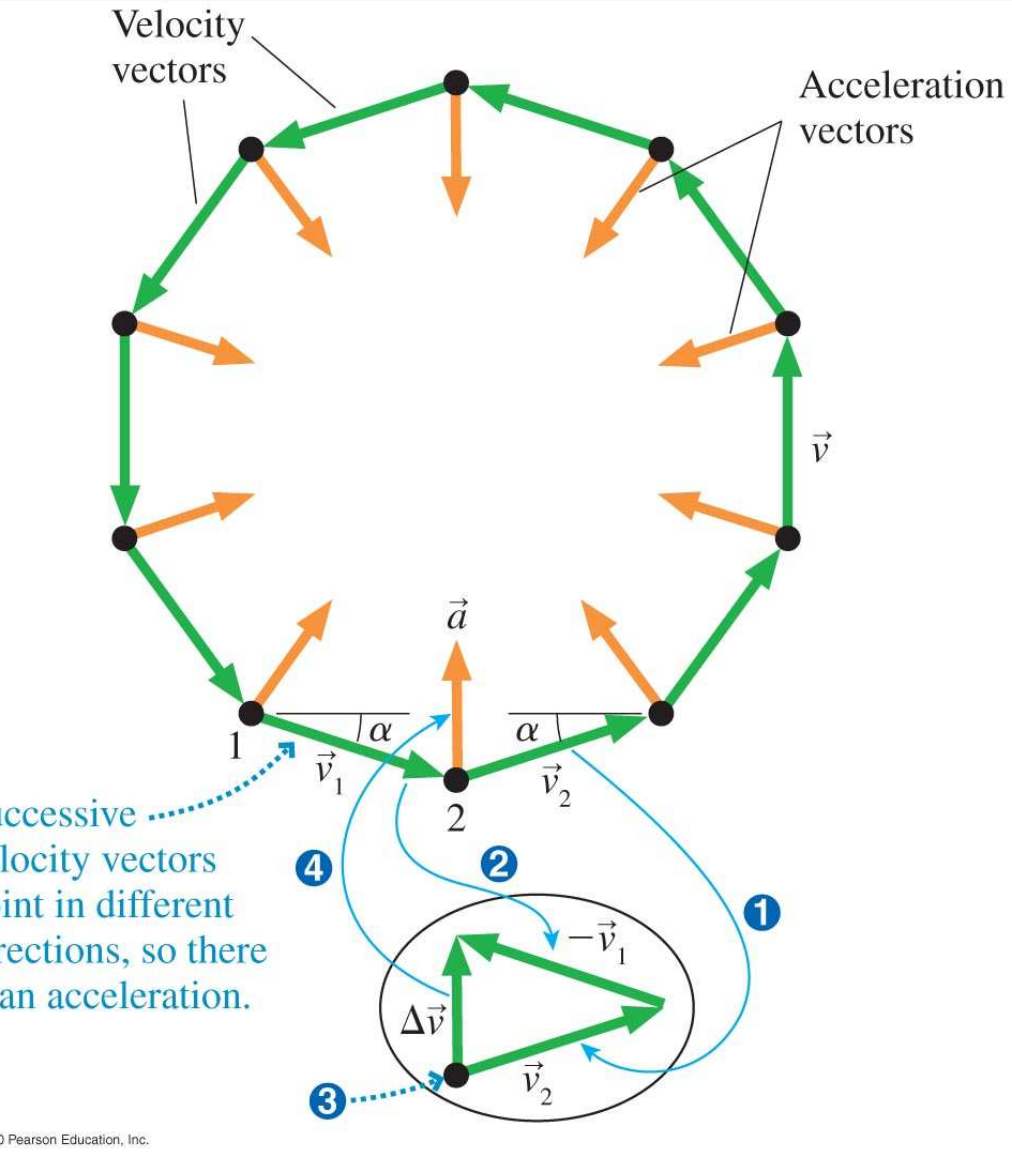

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Section 3.8

The centripetal acceleration like any other is **NOT** put on free-body diagrams. It is created by other forces like weight, tension, normal, *etc.*

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- The man rides into a 100-m radius half-pipe. If he maintains a constant $15\,m/s$ speed, what is his apparent weight at the bottom of the half-pipe?