

February 8, Week 4

Today: Chapter 3, Projectile Motion

Homework Assignment #4 - Due Today

Mastering Physics: 8 problems from chapters 1 and 3.

Written Question: 3.65

Exam #1: Wednesday, February 13

Practice Exam available on website

Review Session: Tuesday, February 12, 4:00-6:00 PM,
Regener Hall 114

Help sessions with Jonathan:

M: 1000-1100, RH 111

T: 1000-1100, RH 114

Th: 0900-1000, RH 114

Summary

Projectile Equations

$a_x = 0$	$a_y = -g$
$v_x = v_{0x}$	$v_y = v_{0y} - gt$
$x = x_0 + v_{0x}t$	$y = y_0 + v_{0y}t - \frac{1}{2}gt^2$
$v_{0x} = v_0 \cos \theta$	$v_{0y} = v_0 \sin \theta$

Projectile Motion Exercise

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Since $\vec{\mathbf{a}}$ is related to the change in $\vec{\mathbf{v}}$, **either** a change in speed or direction involves an acceleration.

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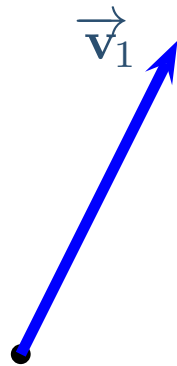
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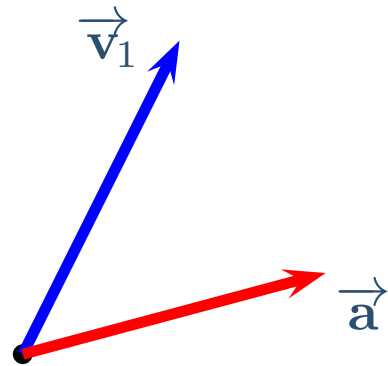


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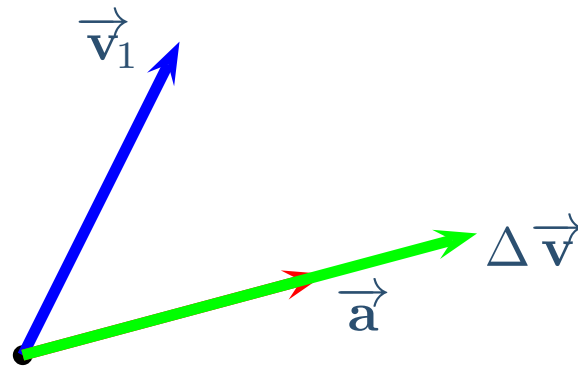
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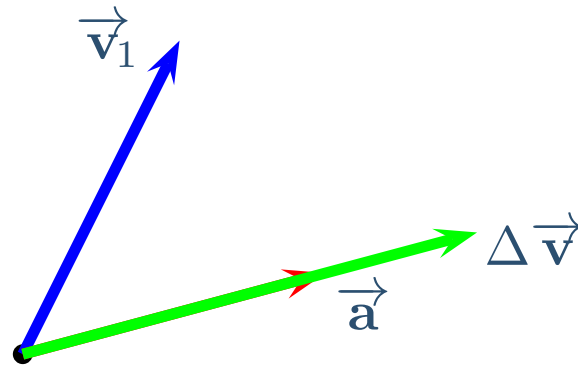


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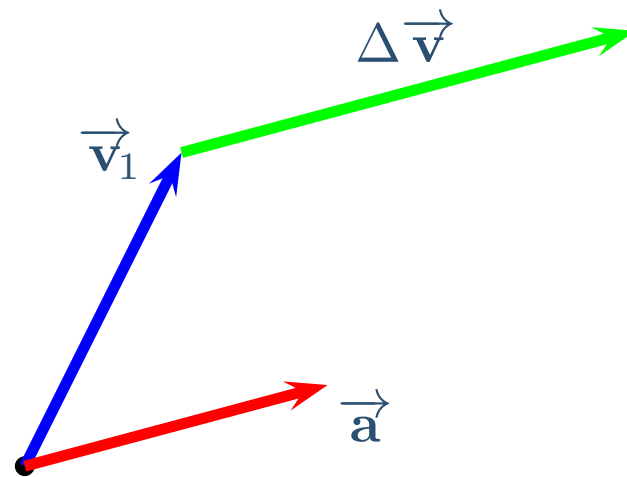
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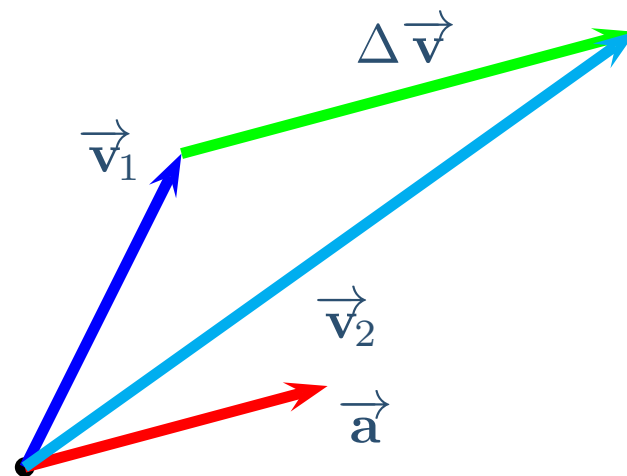
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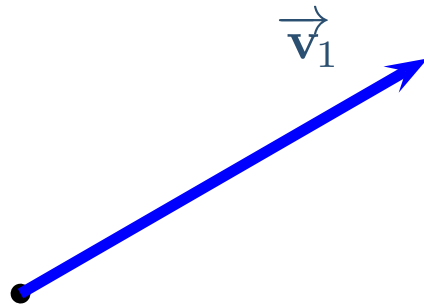
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When \vec{a} is parallel to \vec{v} , speed changes but direction does not.

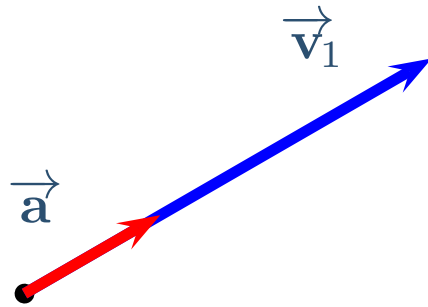
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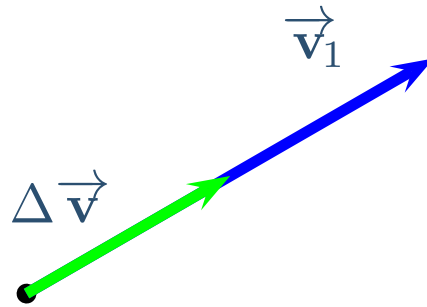
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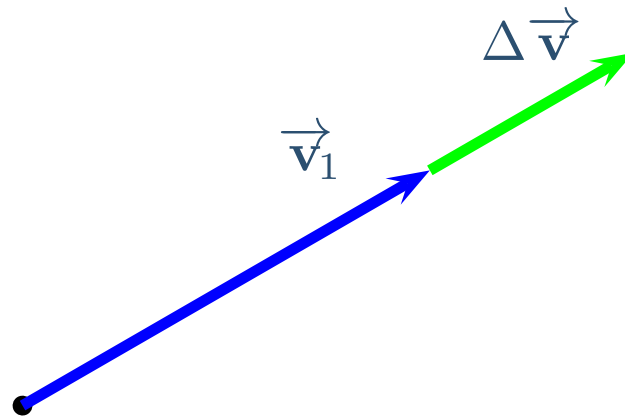
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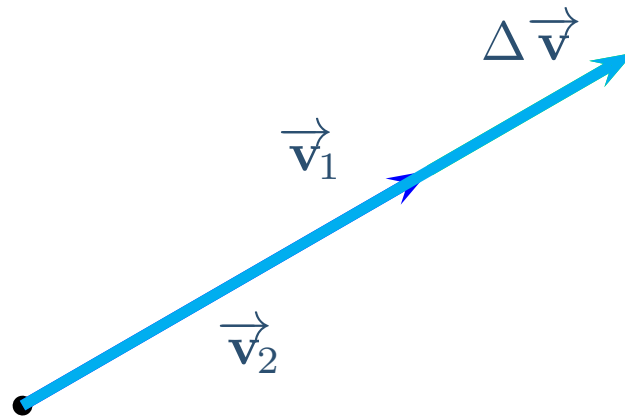
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Only a change
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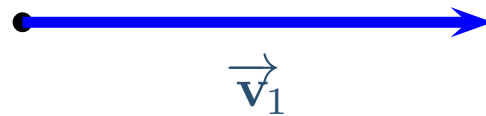
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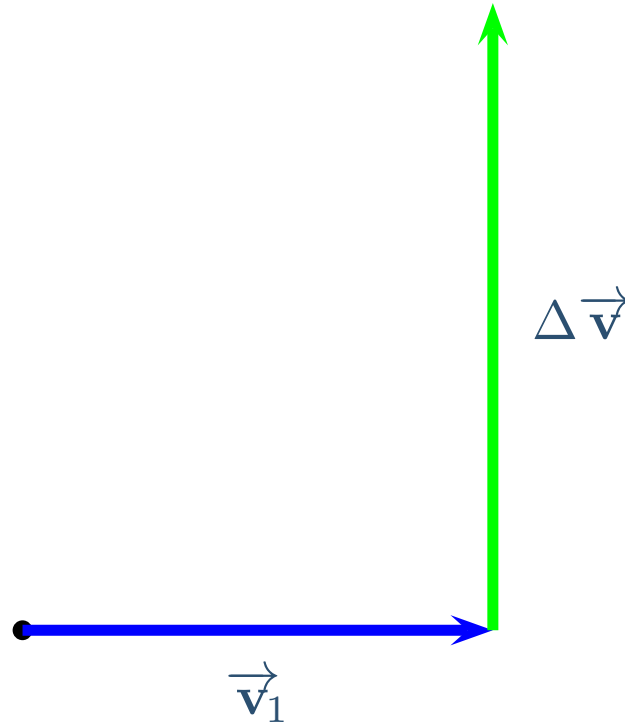
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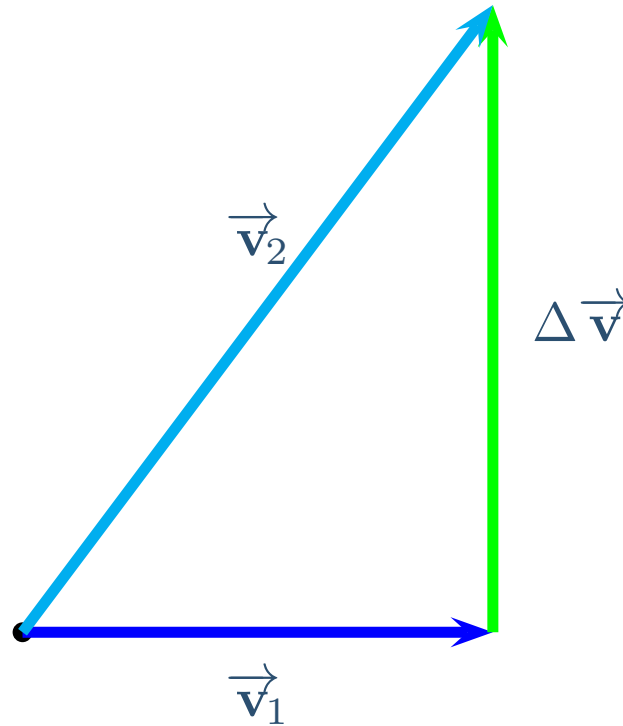
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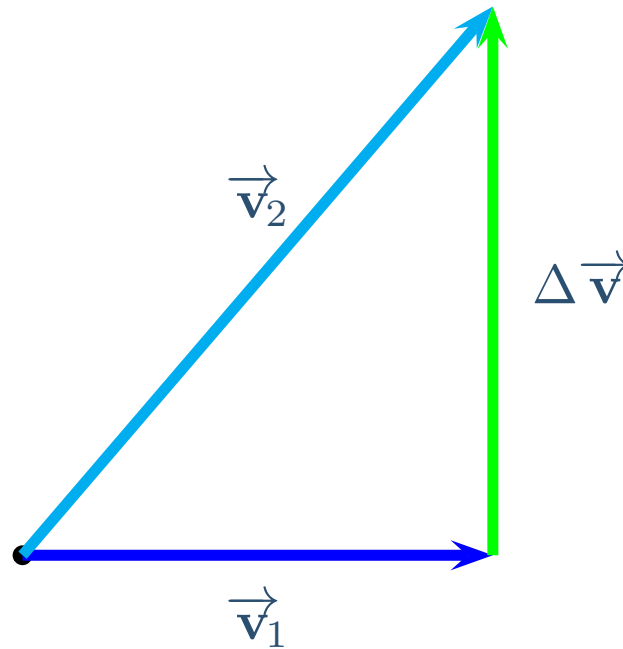
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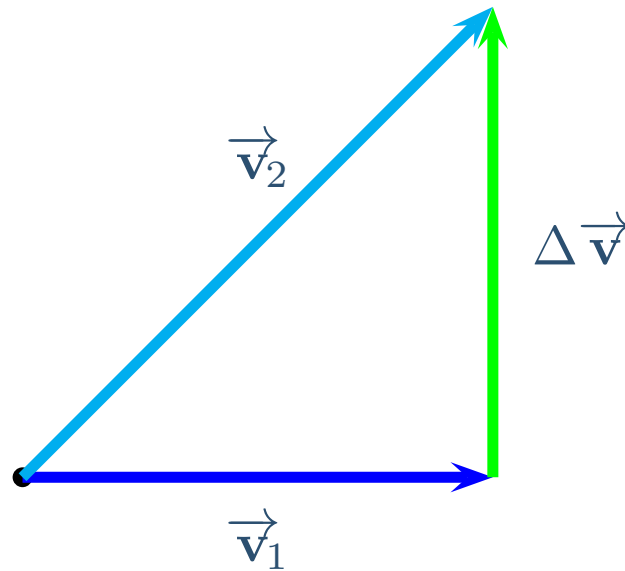


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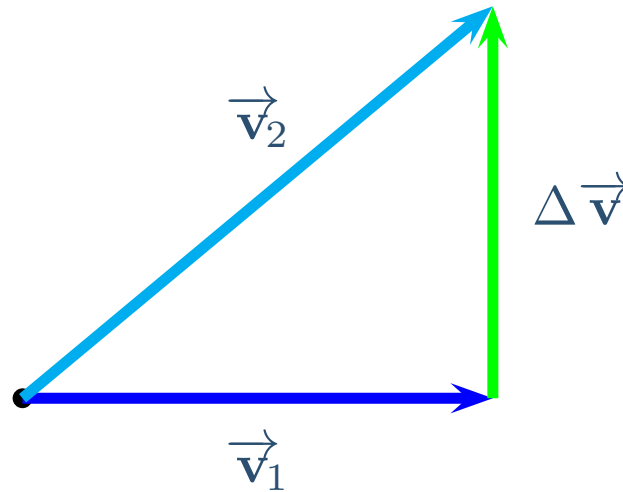


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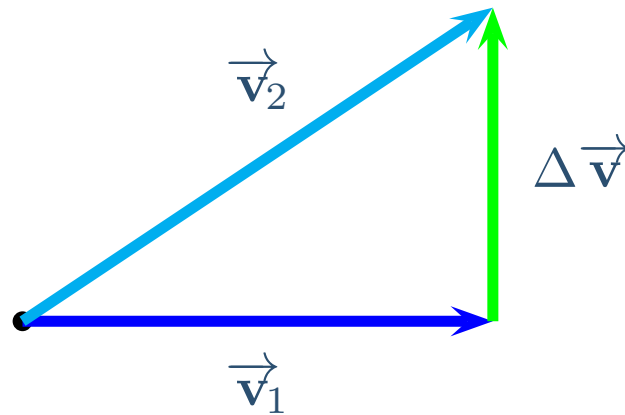


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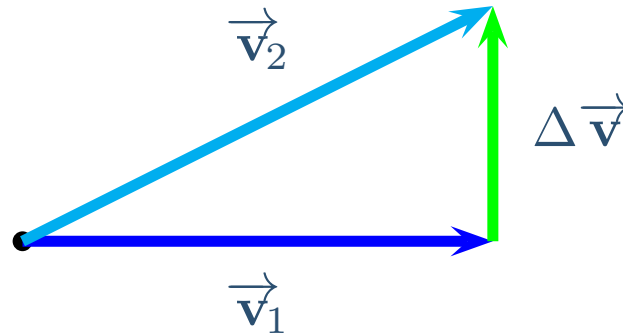


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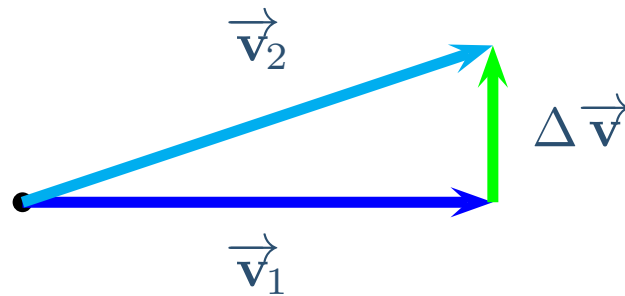
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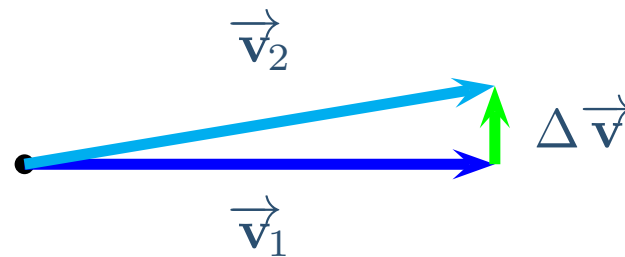
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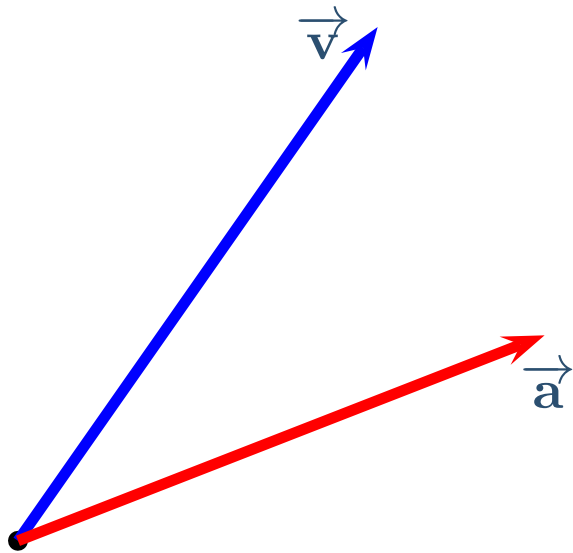
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General Acceleration

An acceleration in an arbitrary direction will change both speed and direction.

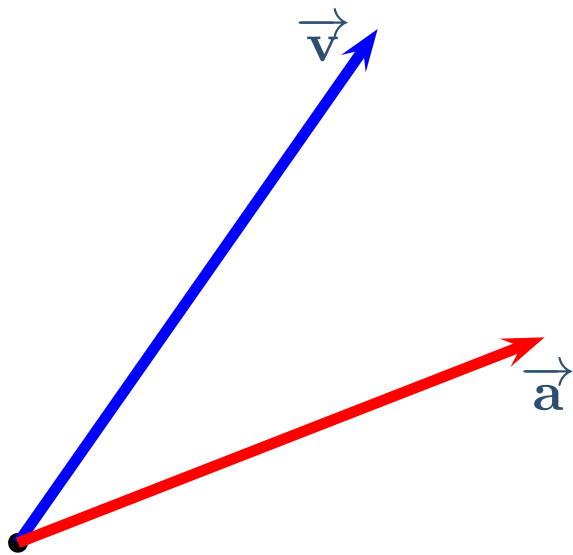
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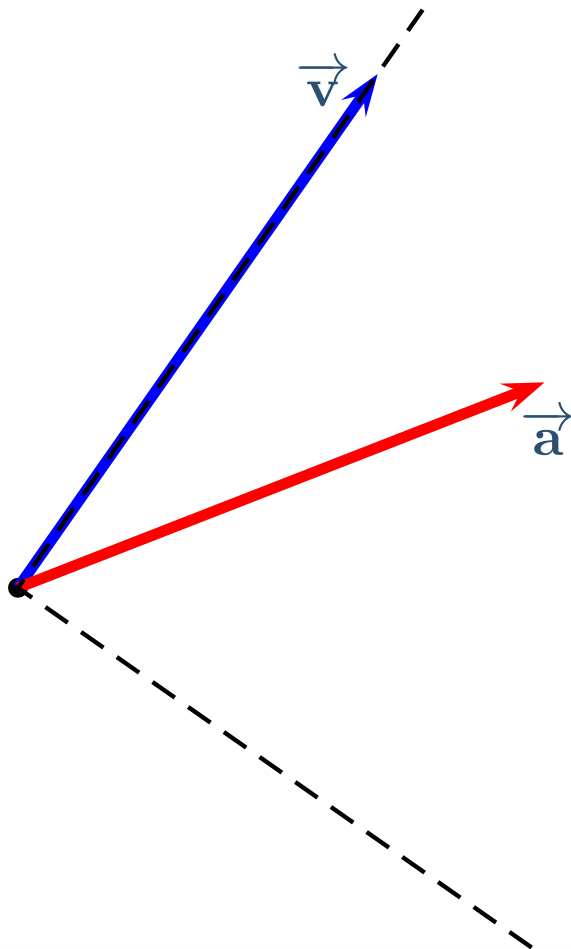
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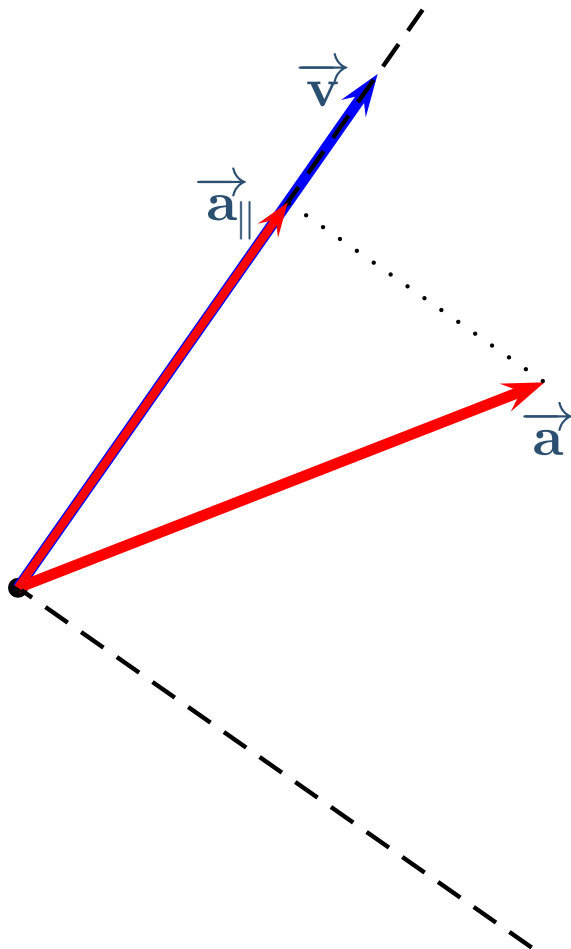
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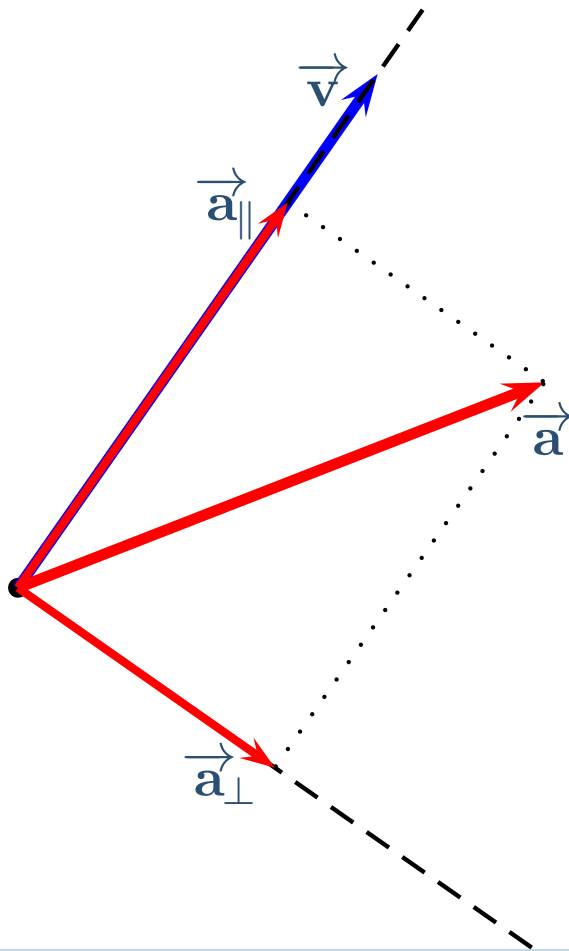


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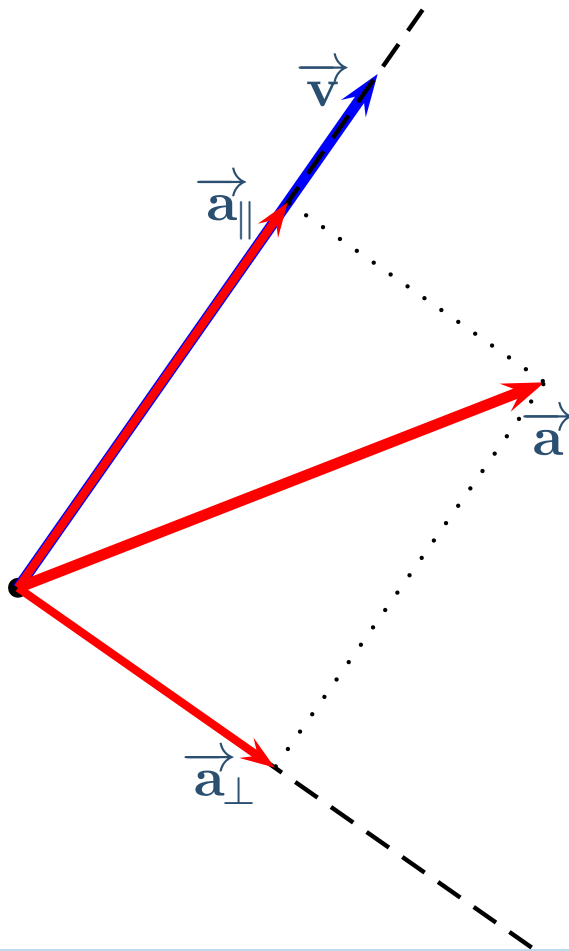
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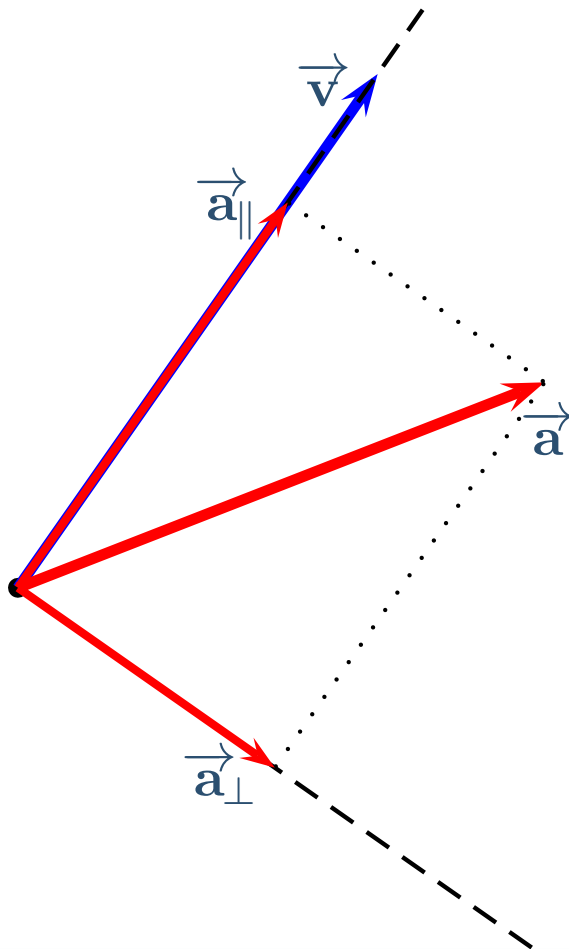
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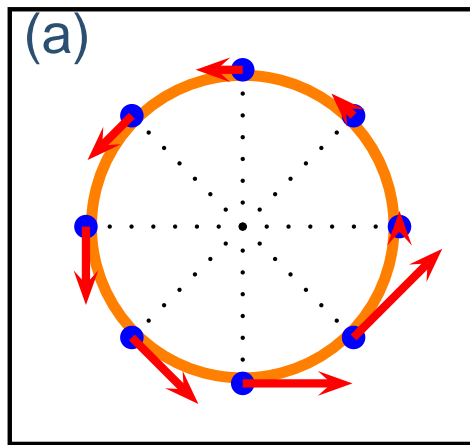
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Trajectory Exercise

Which of the following pictures correctly shows the trajectory and velocity vectors for a ball going counter-clockwise around circle with constant speed.

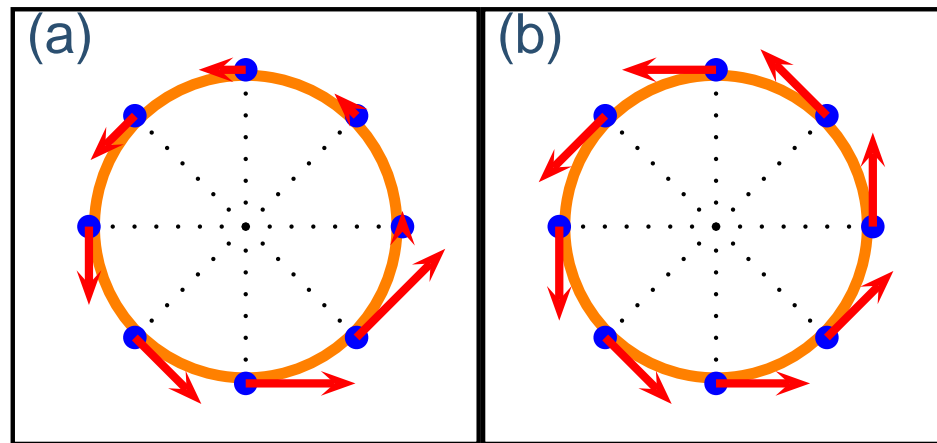
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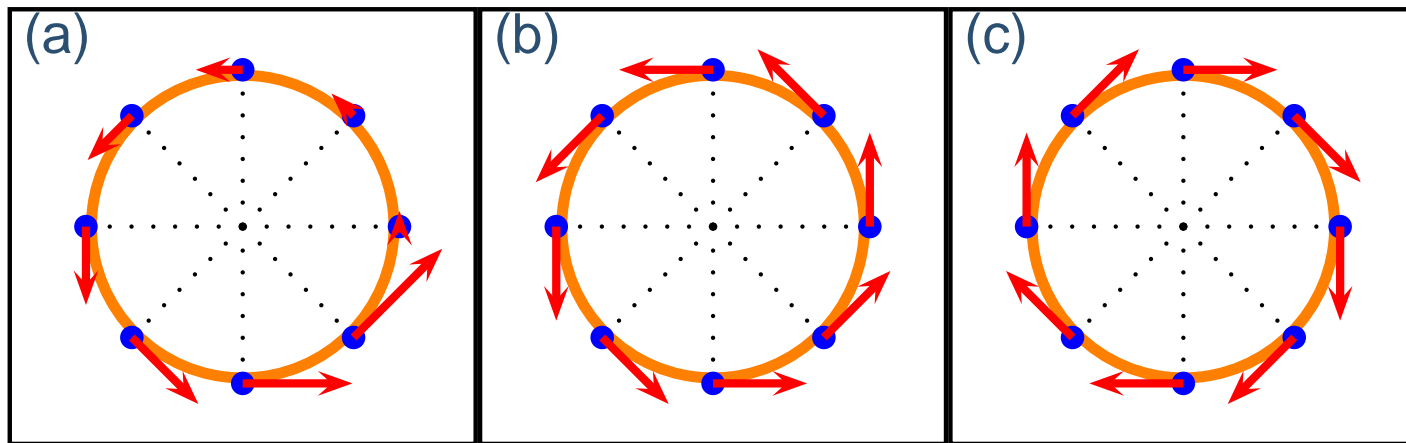
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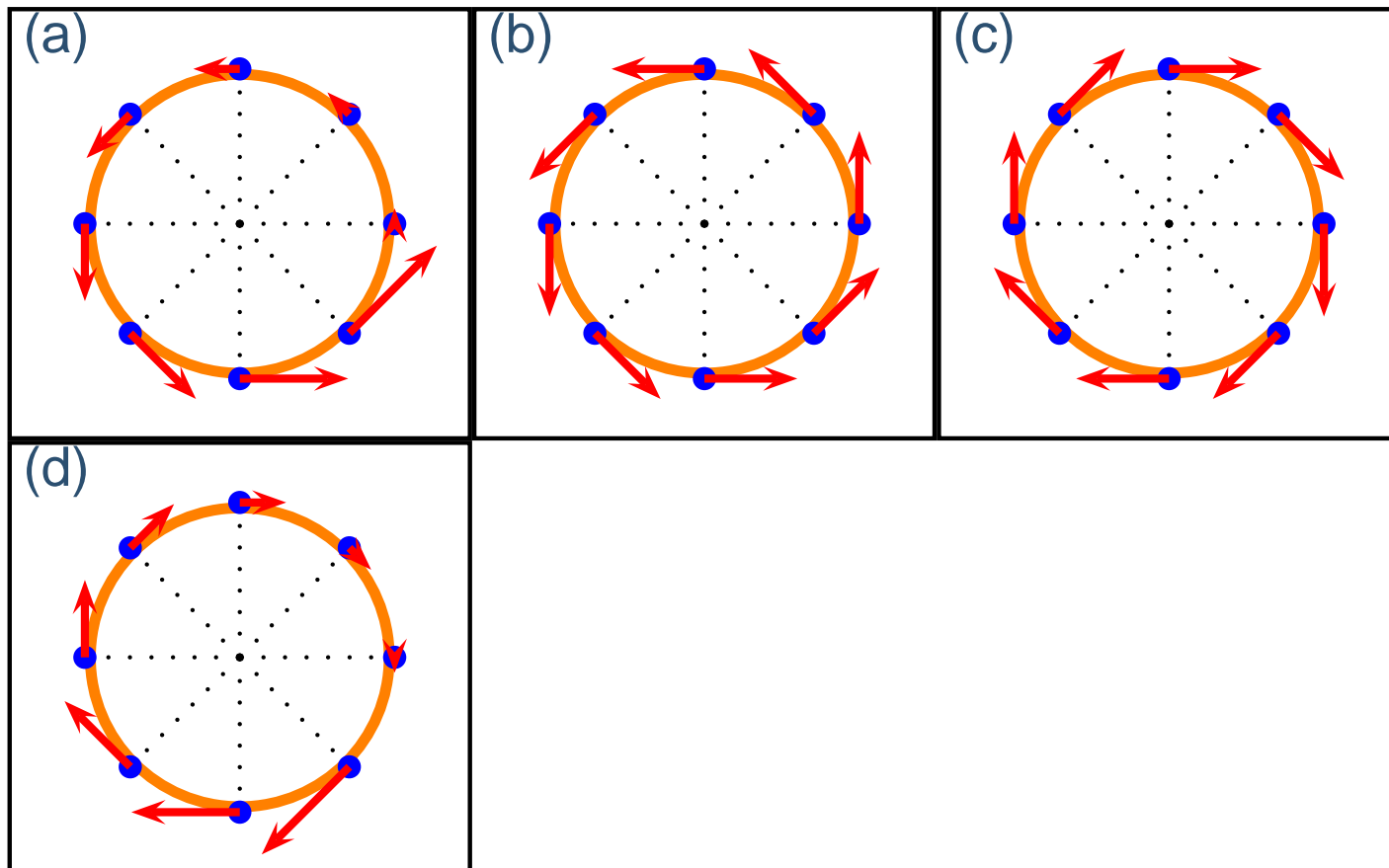
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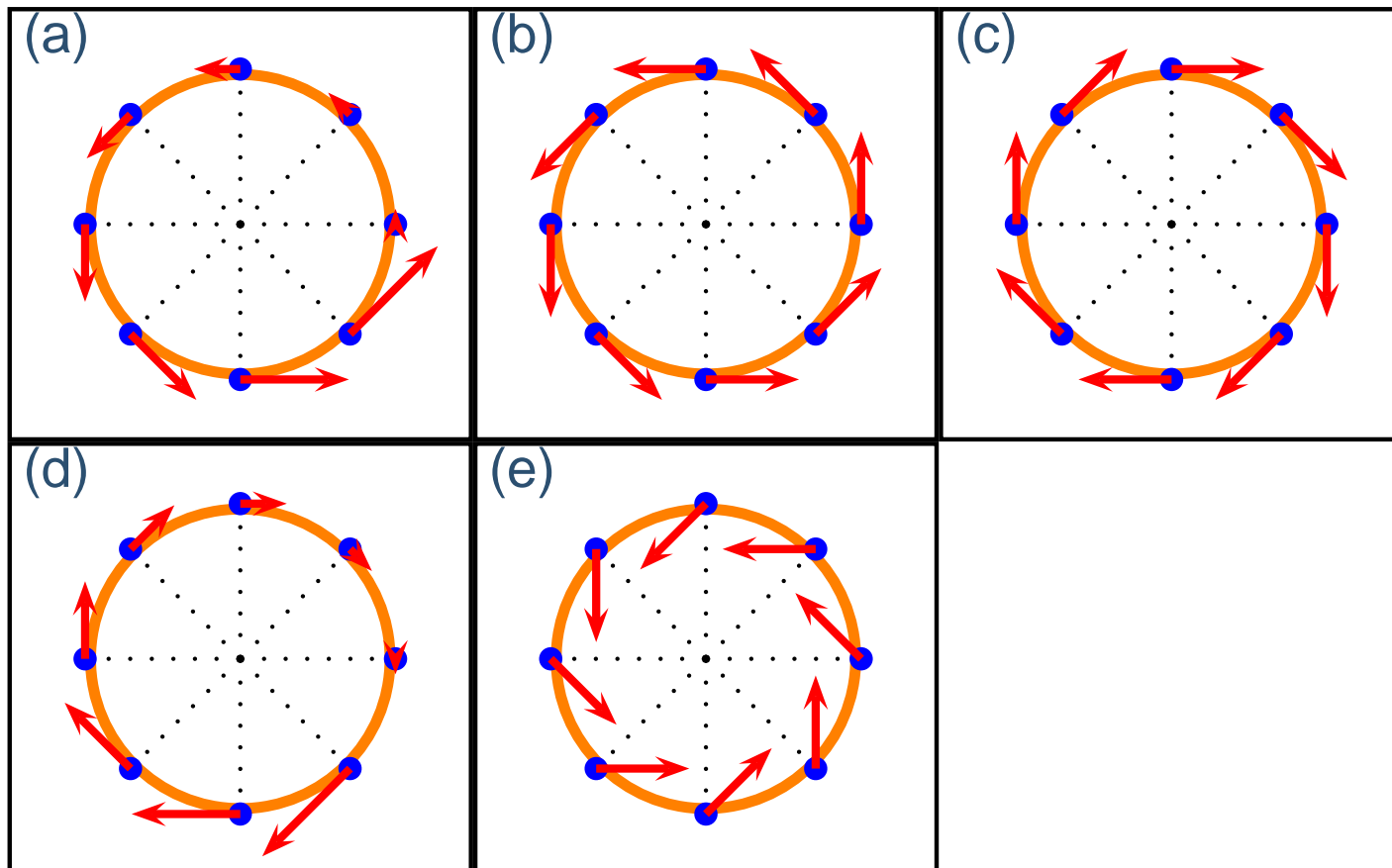
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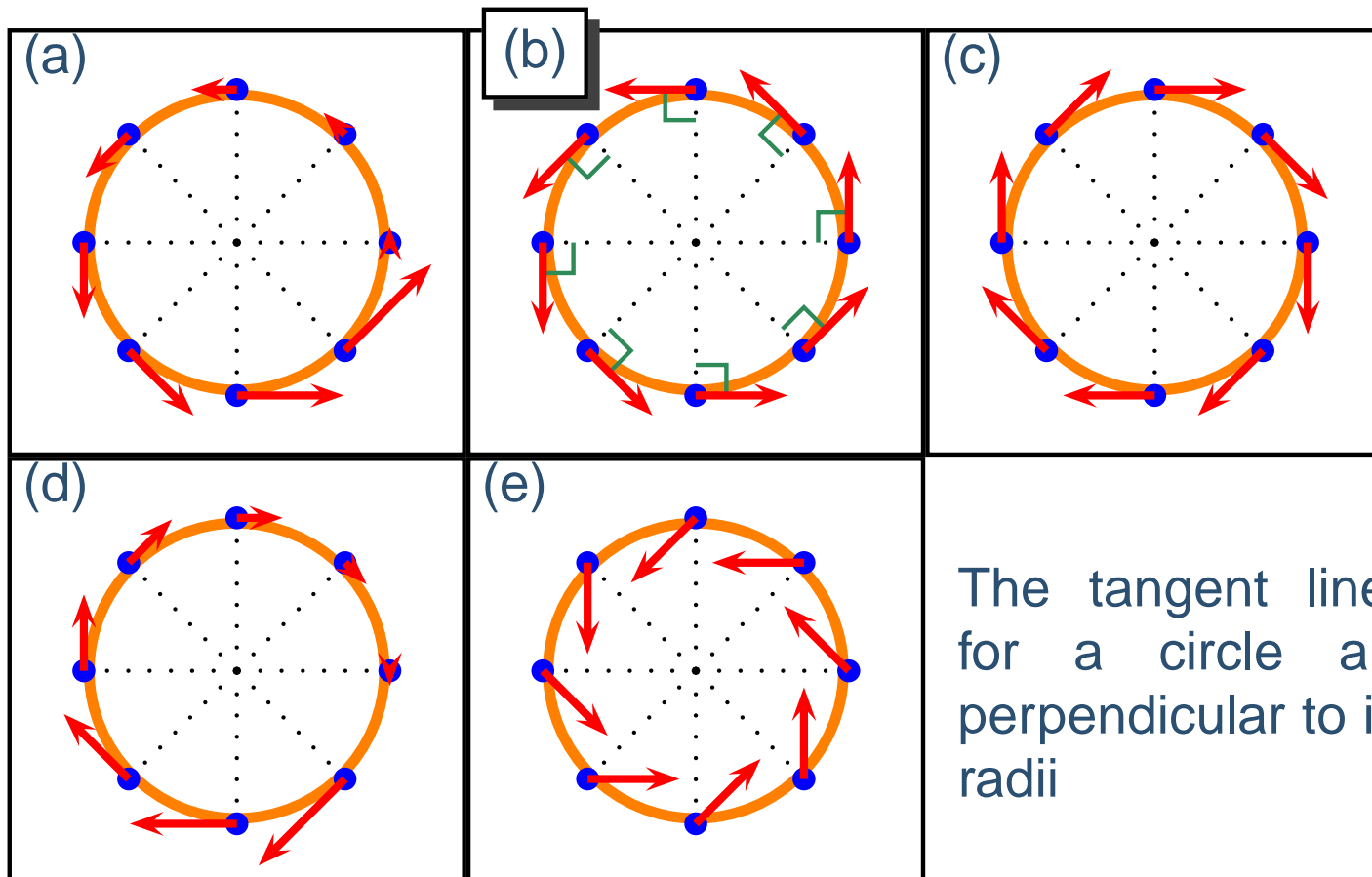
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The tangent lines for a circle are perpendicular to its radii