Students

The following students did not have their clicker response recorded (or answered on a piece of paper).

Aguilera, Joshua	Becenti, Adam	Candelaria, Steven
Cordova, Trey	Economides, Megan	Elias, David
Fournier, Matthew	Gagon, Nicole	Gillen, Cameron
Gordon, Ashley	Hacker, Jessica	Keller, Calvin
Kimball, Elizabeth	Lambert, James	Lee, Nayah
Mitchell, Anne	Olona, Gerome	Ontiveros, Francisco
Silva, Danielle	Silva, Jacob	Smith, Montana
Thompson, Lindsay	Wichman, Stuart	Wiklund, Joseph
Yegerlehner, Erika		

Nathan Thomas, please come see me.

January 27, Week 2

Today: Chapter 2, Constant Acceleration

Homework Assignment #2 due January 30
Mastering Physics: 1.6, 2.4, 2.59, and 3 special Mastering Physics problems.
Written Problem: 2.75.

Homework Assignment #3 due February 6
Mastering Physics: 3 Mastering Physics problems, 2.77, 2.85, 2.93.
Written Problem: 2.88.

Please see website for your homework box number.

Review

Acceleration, a - rate at which *velocity* changes.

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Accelerating vs. Decelerating:

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Accelerating vs. Decelerating:

When a and v have the same sign, speed increases.
When a and v have the opposite sign, speed decreases.

Constant Acceleration

When the acceleration is unchanging with time:

$$\boxed{v = v_o + at}$$

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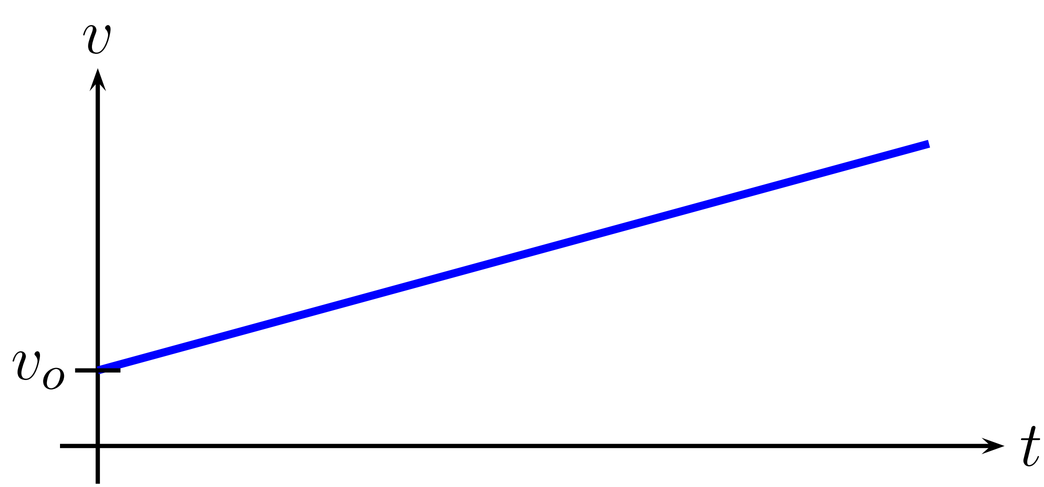

The Position Equation

$$v = \frac{dx}{dt}$$

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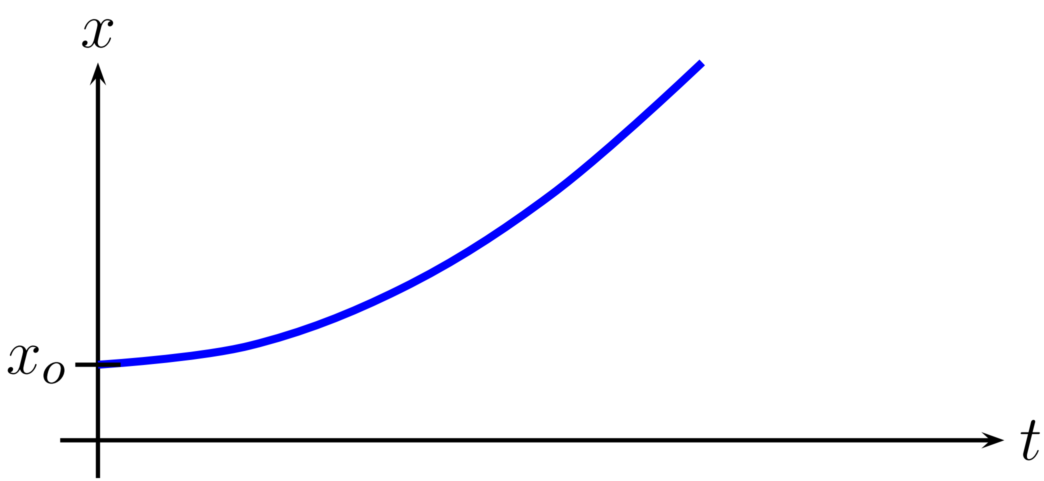

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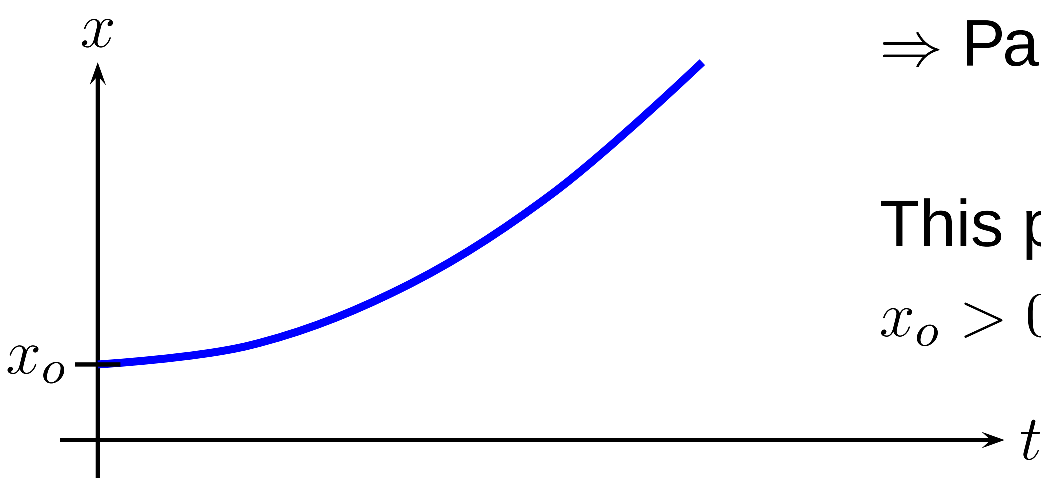

$x = x_o + v_o t + \frac{1}{2}at^2$

$\Rightarrow$ Parabola

This parabola has

$x_o > 0, v_o > 0, a > 0$

Clicker Quiz

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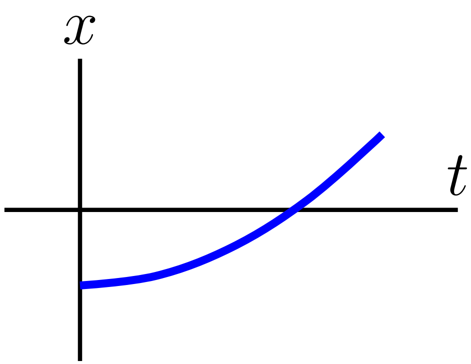

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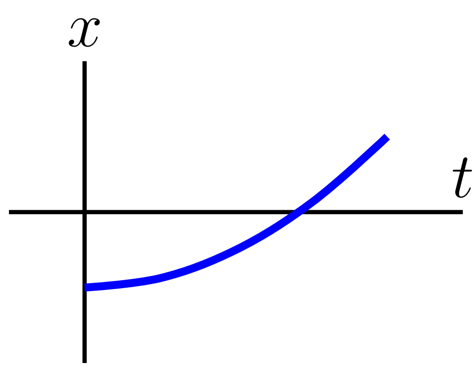

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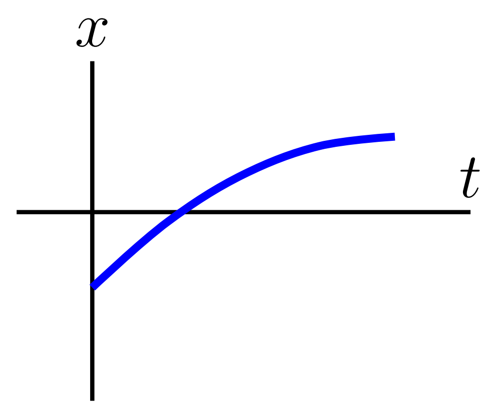

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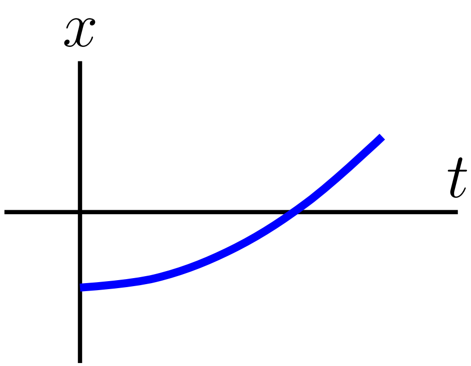

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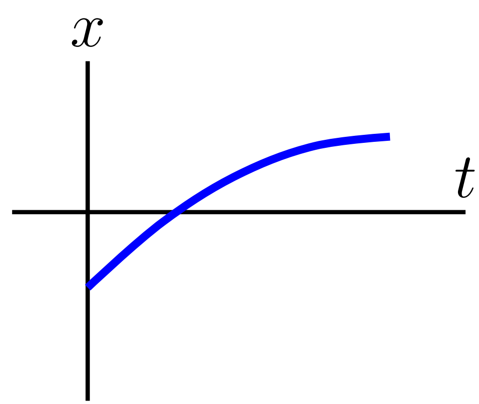

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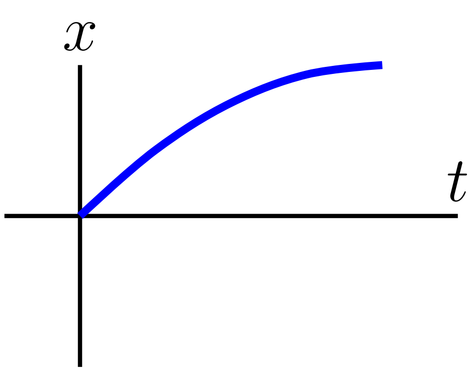

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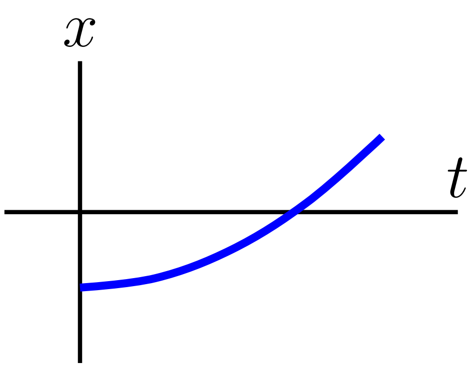

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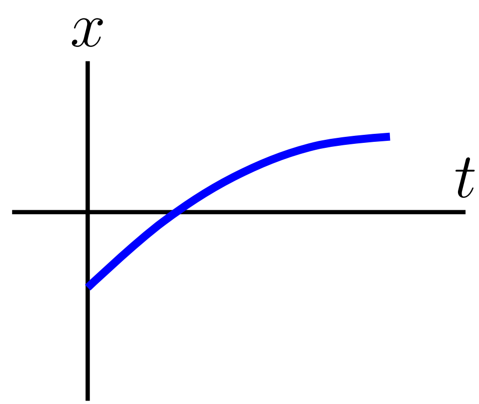

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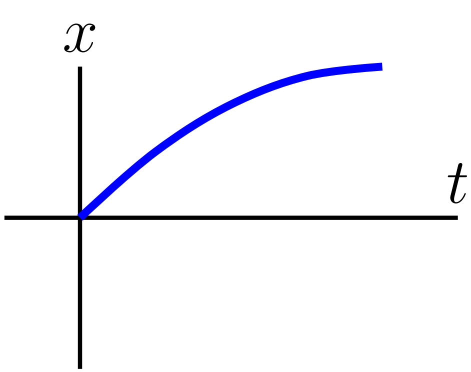

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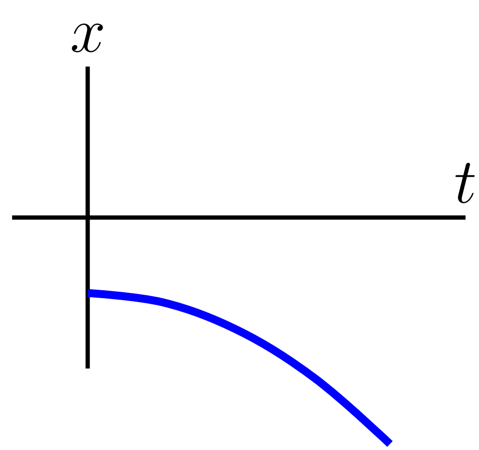

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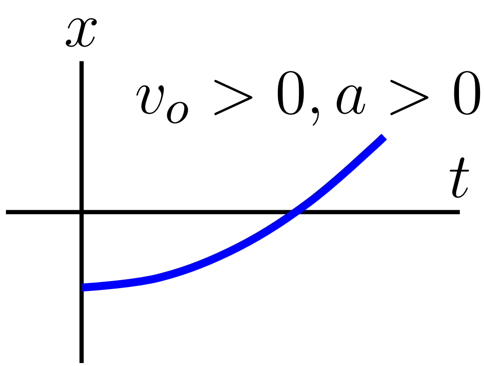

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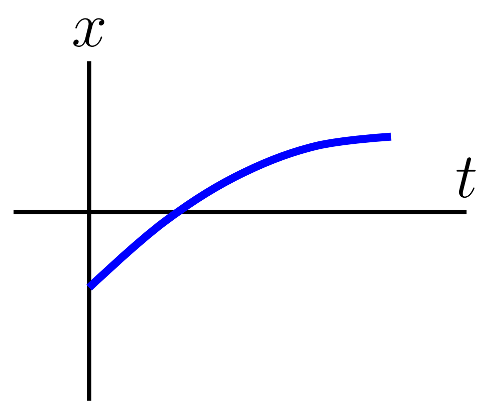

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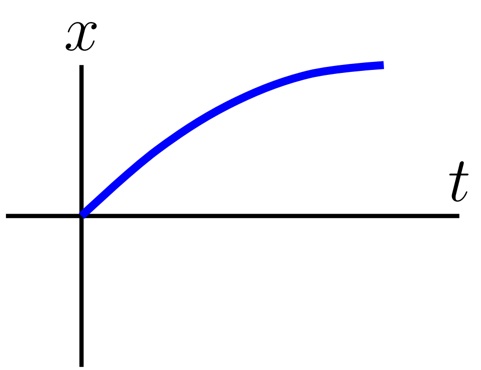

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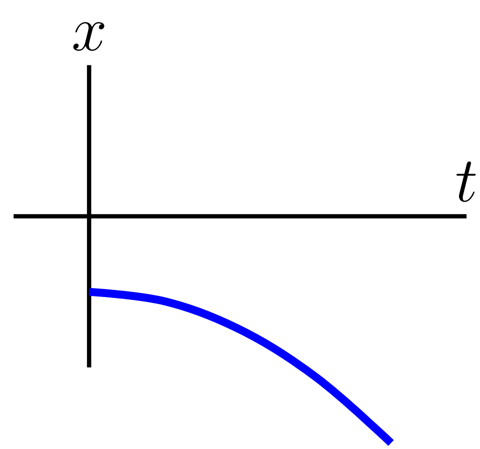

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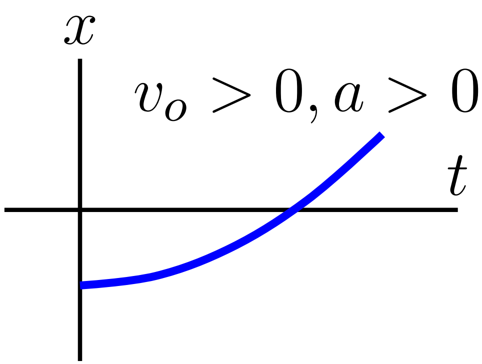

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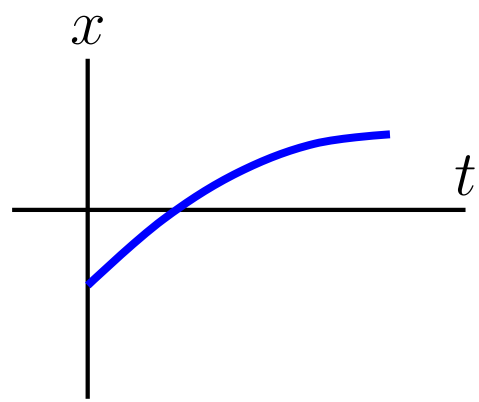

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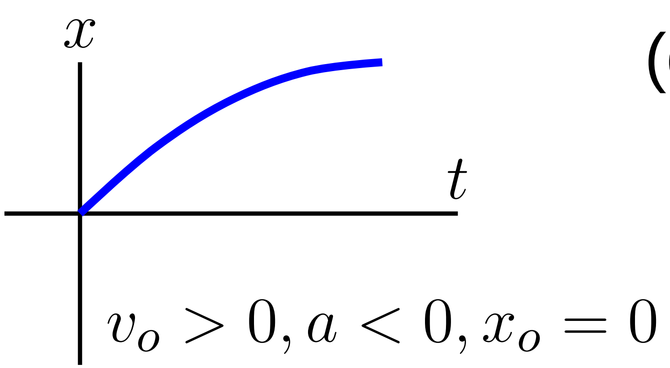

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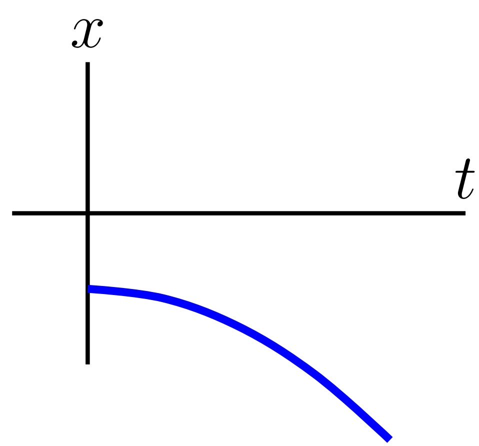

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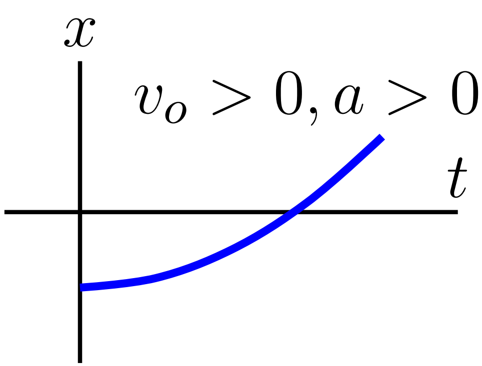

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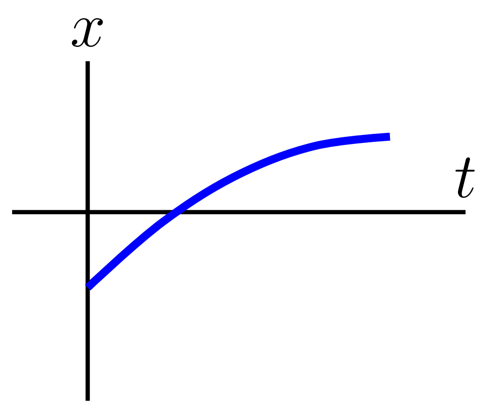

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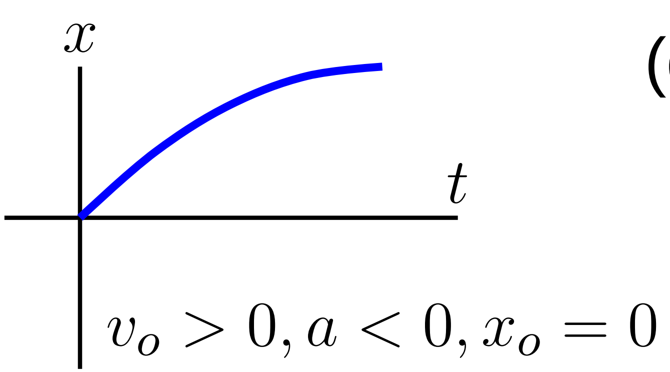

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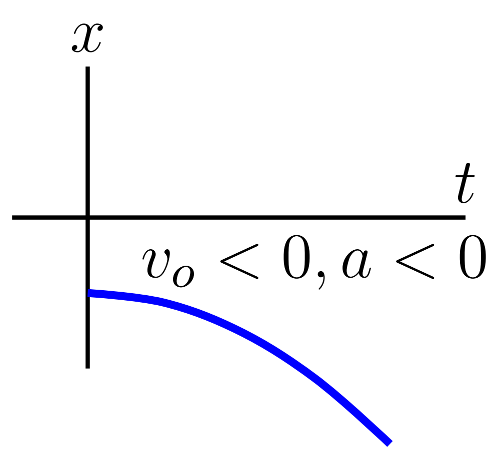

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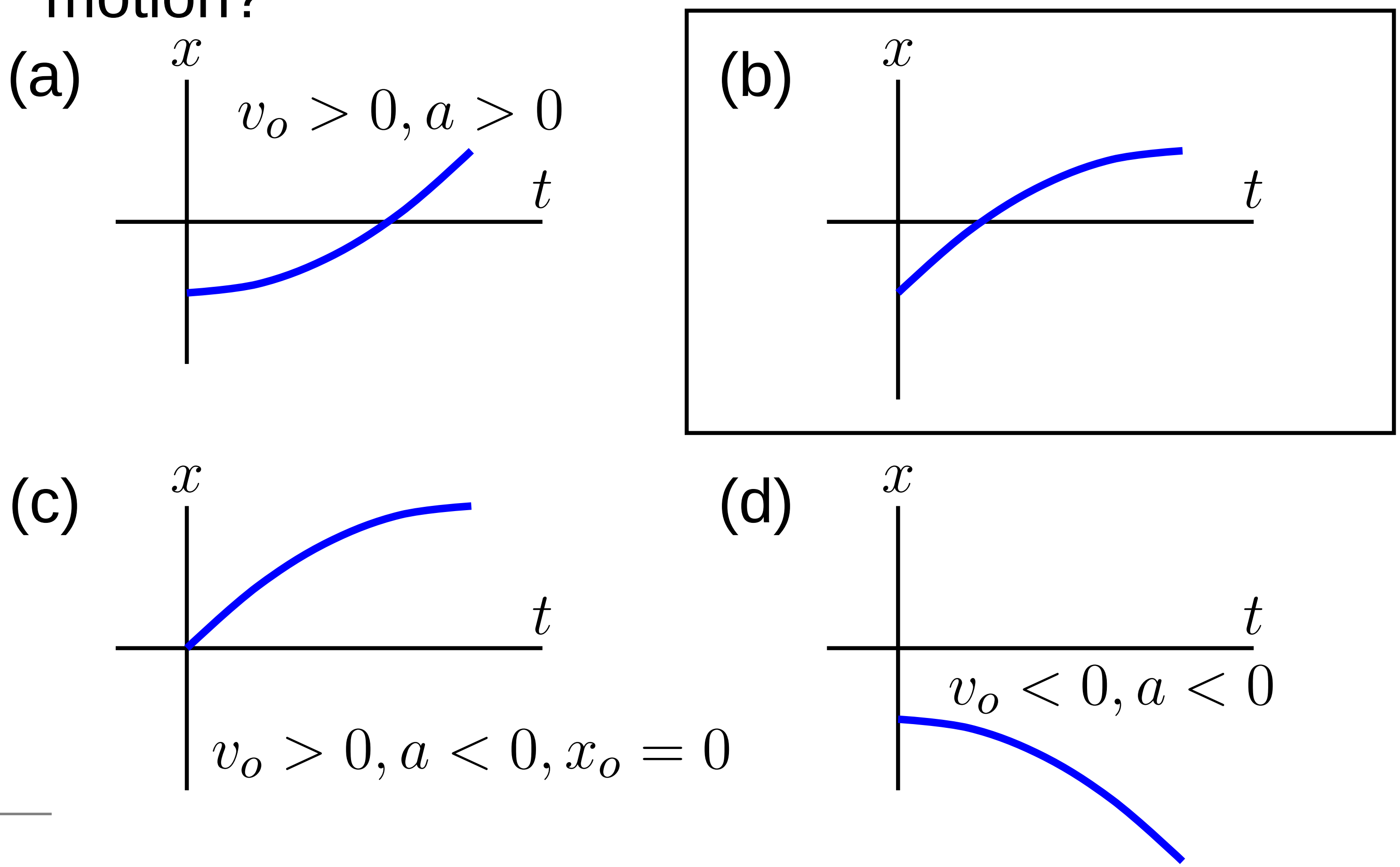

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$$x - x_o = \frac{1}{2}\left(v_o + v\right)t$$

Example I

Example: A car is traveling on a straight road with a speed of $30\,m/s$ when the driver hits the brakes causing a constant deceleration of $5\,m/s^2$. How far does the car go while stopping?

Example II

Example: A ball is thrown upwards with a velocity of $10\,m/s$. If we can ignore air resistance, what is its velocity after $1.5\,s$?

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I encourage you to show:

- The ball spends an equal amount of time going up as coming back down.
- The ball returns to $x = 1.5\,m$ with the same *speed* it started with.