See the HiHW grading rubric posted on Carmen

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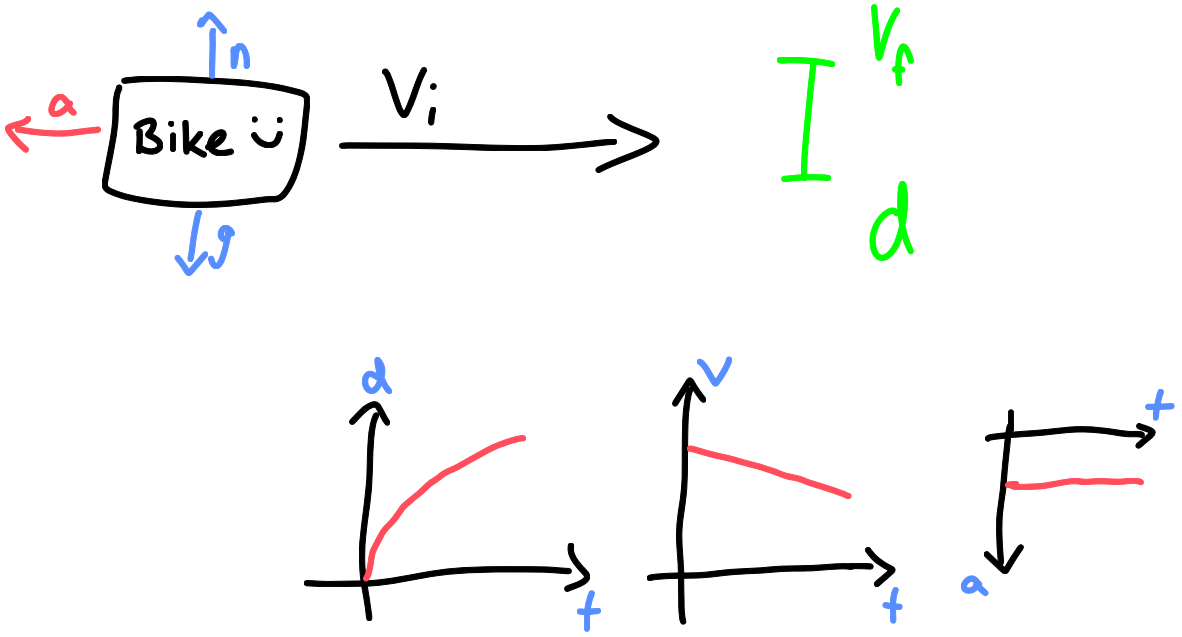
A bicyclist is traveling with initial speed $v_i = 9.4\,\text{m/s}$ when she begins to slow down with constant acceleration. The magnitude of this acceleration is $a = 4.3\,\text{m/s}^2$. How much distance d does she cover by the time she has dropped to $x = 50\%$ of her initial speed? As part of the representation, make sure to draw graphs of *position* vs. *time*, *velocity* vs. *time*, and *acceleration* vs. *time*. For the limits check, investigate what happens to d if the magnitude of her acceleration is very small ($a \to 0$).

Representation:	0	1	2
Physics Concept(s):	0	1	2
Initial Equation(s):	0	0.5	1
Symbolic Answer:	0		1
Units Check:	0	0.5	1
Limits Check:	0	0.5	1
Neatness:	-2	-1	0
Total:			
Correct Answer:	Y	N	

Representation



Physics Concept(s) (Refer to the list posted on Carmen)

(1) One-Dimensional Kinematics

Initial Equations

$$V_f^2 = V_i^2 + 2ad$$

↓ Show Your Equation Work On Next Page ↓

Algebra Work (Symbols only. Don't plug in any numbers yet.)

$$V_f^2 = V_i^2 + 2ad$$

$$V_f^2 - V_i^2 = 2ad$$

$$\frac{V_f^2 - V_i^2}{2a} = d$$

Symbolic Answer: $\frac{V_f^2 - V_i^2}{2a}$

Units Check

$$\frac{V_f^2 - V_i^2}{2a} = d$$

$$m = \frac{(m/s)^2 - (m/s)^2}{m/s^2} \rightarrow \frac{m^2/s^2}{m/s^2}$$

$= m$

Limits Check

a) As $a \to 0$, what limit does d approach?

$$\lim_{a \to 0} d = \infty$$

b) Why does the result make physical sense?

Since acceleration never reaches 0, velocity will approach infinity, therefore distance will also approach infinity.

Numerical Answer: (Obtain this by plugging numbers into your symbolic answer.)

$\frac{V_f^2 - V_i^2}{2a} = d$ $\frac{4.7^2 - 9.4^2}{2(-4.3)} \rightarrow \frac{22.09 - 88.36}{-8.6} \rightarrow \frac{66.27}{8.6} =$ **7.71 m**