

Motion #4

Thursday, April 20, 2017 11:06 AM

Worksheet 4. What You Need to Know About Motion Along the x -axis (Part 2)

1. Speed is the absolute value of _____.
2. If the velocity and acceleration have the same sign (both positive or both negative), then speed is _____.
3. If the velocity and acceleration are _____ in sign (one is positive and the other is negative), then speed is decreasing.

There are three ways to use an integral in the study of motion that are easily confused. Watch out!

4. $\int v(t) dt$ is an _____ integral. It will give you an expression for _____ at time t . Don't forget that you will have a _____, the value of which can be determined if you know a position value at a particular time.
5. $\int_{t_1}^{t_2} v(t) dt$ is a _____ integral and so the answer will be a _____. The number represents the change in _____ over the time interval. By the Fundamental Theorem of Calculus, since $v(t) = x'(t)$, the integral will yield $x(t_2) - x(t_1)$. This is also known as displacement. The answer can be positive or _____ depending upon if the particle lands to the _____ or left of its original starting position.
6. $\int_{t_1}^{t_2} |v(t)| dt$ is also a _____ integral and so the answer will be a number. The number represents the _____ traveled by the particle over the time interval. The answer should always be _____.

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