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| **PH 201 Post-Lab 03** | **1 Dimensional Motion** | **Name** |  |

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| The experiment this week involved a cart accelerating down an inclined plane. The basic equation used was $x=\frac{1}{2}at^{2}$ |
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| 1. What fundamental condition must have been true for this to be the valid equation of motion? Hint: Consider whether or not this is normally a kinematical equation. |
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| 2. Data of times measured as a cart rolled down an incline plane at various distances is collected. If one plotted x vs. t2 and a trendline was plotted what should the y-intercept be in the ideal situation? |
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| In the experiment the trendline plotted resulted in the equation: $x=0.512 ^{m}/\_{s^{2}}t^{2}-0.087 m$. What physically does the value of the y-intercept tell you? |
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| 3. Using the equation: $x=0.512 ^{m}/\_{s^{2}}t^{2}-0.087 m$], what would you determine the acceleration of the cart in the experiment was? |
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| 4. If instead one plotted ln(x) vs. ln(t) for the relationship $x=\frac{1}{2}at^{2}$, in an ideal situation what should the slope of the ln-ln plot be? |
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| 5. If the acceleration of the cart was 0.834 m/s2, what would the y-intercept of the ln-ln plot be? |
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