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

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|  | In this week’s lab we are going to measure the time it takes a cart to roll down an incline plane a distance x. We are interested in determining the cart’s acceleration down the incline plane. The cart will be released from rest.  |

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| 1. What 4 kinematical variables are involved in this situation? |
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| 2. What general kinematical equation relates these 4 variables? |
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| Using the fact that v0 = 0, this equation reduces to $x=\frac{1}{2}at^{2}$ |
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| 3. If we plot **x** on the dependent (y-axis) and **t** on the independent (x-axis), what kind of curve should we get? |
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| 4. One way to produce a straight line is to plot **x** on the dependent (y-axis) and to plot **t2** on the independent (x-axis), if that is done what is the slope of the line (physically, not numerically)? |
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| 5. How would one determine the cart’s acceleration from the plot done in question (4)? |
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| 6. Another way to produce a straight line is to plot **ln(x)** on the dependent (y-axis) and to plot **ln(t)** on the independent (x-axis), if that is done what is the slope of the line?  |
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| 7. What would be the y-intercept of this ln-ln plot |
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| 8. .How would one determine the cart’s acceleration from the plot done in question (6)? |
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