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| |  |  |  | | --- | --- | --- | | **Worksheet for Lab on One Dimensional Motion** | **Name** |  | | **With Constant Acceleration.** |  |  | |  | **Date** |  | |
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| |  |  |  | | --- | --- | --- | |  | **Partner #1** |  | |  |  |  | |  | **Partner #2** |  | |
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| **Graph #1 – vs t** |
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| First plot versus t ( on the vertical axis and t on the horizontal axis) and see what the relationship looks like. If the data agrees with the theoretical relationship, the plot should be a parabola. You should be able to verify that the plot is not straight. |
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| Create the graph, ensuring that it has the required elements: a title, your name, the date, axes labeled with the name, symbol, and units of the variable, etc. Since the data does not form a straight line, **do not include** a best-fit line through the data. |
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| Place the Plot after this page. |
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| **Graph #2 – vs – Linearize by Powers** |
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| Create the plot. This time put in a trendline. Reformat the trendline to change y and x to and also add units where appropriate to the numbers. Remember the required elements: a title, your name, the date, axes labeled with the name, symbol, and units of the variable, etc. |
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| Work out the steps (type them below) to show how the acceleration is determined from the Slope and/or the Y-intercept. Determine the acceleration. |
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| |  |  | | --- | --- | | **Slope:** |  | |  |  | | **y-intercept:** |  | |  |  | | **a** |  | |
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| Place the Plot after this page. |
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| **Graph #3 – Logarithmic Analysis** |
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| Create the plot. Put in a trendline. Reformat the trendline to change y and x to and also add units (ln(units)) where appropriate to the numbers. Remember the required elements: a title, your name, the date, axes labeled with the name, symbol, and units of the variable, etc. |
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| Type in the steps going from to the equation |
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| Work out the steps (type them below) to show how the acceleration is determined from the Slope and/or the Y-intercept. Determine the acceleration. |
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| |  |  | | --- | --- | | **Slope:** |  | |  |  | | **y-intercept:** |  | |  |  | | **a** |  | |
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| Place the Plot and the Workbook print out after this page. |
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| **Final Comparison of Accelerations** |
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| Compare your values of *a* from the two different methods (Linearize by Powers or Linearize using Logarithms). Calculate a percentage difference using the formula |
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| First find |
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| Fill in the values and calculate: |
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| |  |  | | --- | --- | | **%diff1 =** |  | |
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| Now measure angle |
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| Calculate acceleration from |
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