

**Attach a copy of this sheet to the top of your project report.**

## **Roller Coaster Project -- Scoring Sheet**

- \_\_\_\_\_ (10 pts) The report has an appropriate introduction and conclusion. The introduction explains how you went about coming up with your design (no equations are included in the introduction), and the conclusion does a good job of convincing Charlie's Entertainment to select your design.
- \_\_\_\_\_ (15 pts) The report includes all the correct equations of the entire ride. You need to derive these equations and work must be shown (in an appendix) to support your equations. These are to be presented in a table with columns for each of the following: the equation, its interval of definition, height of peak or loop (if any within the interval), slope of steepest descent (if any).
- \_\_\_\_\_ (15 pts) The report explains, in detail, how you derived the equations. If many calculations were similar, you need only a detailed explanation for the first equation, then summaries for the other equations. Your explanations need to be easy to follow. List each "splice point" with its associated slope of the tangent at that point. Make sure you have attached supporting work in proper notation (either neatly handwritten or typed with an equation editor) using those points and slopes.
- \_\_\_\_\_ (10 pts) The report has an accurate computer generated graph of the entire ride. Units on both axes are visible, and the graph is printed in landscape mode to take up an entire page.
- \_\_\_\_\_ (10 pts) The report has accurate calculation of the thrill, including an explanation of how you calculated the thrill. The thrill calculation includes the thrill of each descent, the loop(s), and the added thrill for each peak. Your calculations and explanations are easy to follow.
- \_\_\_\_\_ (10 pts) The report has an accurate calculation of the cost of the supports, including an explanation of how you calculated the cost. Easy to follow.
- \_\_\_\_\_ (20 pts) The roller coaster satisfies all the required conditions -- 500 feet long, no more than 150 feet high, every hill is no more than 75% of the previous hill, starts and ends with a short horizontal section outside the 500 feet on either side. The roller coaster is smooth -- the function values and derivatives match at every connection between equations.
- \_\_\_\_\_ (10 pts) The report format is appropriately formal -- organized and clear, complete, proofread, well-packaged, and typed.
- \_\_\_\_\_ Subtotal
- \_\_\_\_\_ Bonus
- \_\_\_\_\_ **Total**