

Chapter 3 Assignment: Roller Coaster

Apply your knowledge of polynomial functions to create a design on <https://www.desmos.com/calculator> for a ride on a waterpark that shows the graph representing the height of the roller coaster versus horizontal distance. Some portions of each section may be underwater. You must submit a UNIQUE design that is your own work. Try to be creative with your design and make it fun!

You design must meet the following criteria:

1. There must be two different sections to your ride:
 - section 1: a polynomial function of an odd degree (not linear)
 - section 2: a polynomial function of even degree (not quadratic)
2. Both functions must:
 - significantly different from one another
 - have three or more terms in standard form
 - be factorable
3. You must provide a “legend” that states the polynomial equation for each of the sections of the ride:
 - in standard form
 - in factored form
 - state the degree, leading coefficient, number of turning points, domain and range for both polynomial functions

Criteria	Function 1 : Standard form: _____ Factored form: _____	Function 2 : Standard form: _____ Factored form: _____
Degree		
Leading coefficient		
Number of turning points		
Domain		
Range		

4. Answer the following questions:
 - state the roots of the polynomials and interpret their meaning in the context of this question.
 - state the local maxima and minima of the polynomials and interpret their meaning in the context of this question
5. Submit your answers as a pdf file and submit the link to your Desmos design to Moodle drop box.

Grading Rubric

Thinking Two different polynomial functions are shown in the design.	Incomplete <i>0 points</i>	Only one polynomial function is shown. <i>1 points</i>	Two polynomial functions shown but one is quadratic or linear. <i>2 points</i>	Two different polynomial functions are shown but they are not connected in the diagram. <i>3 points</i>	Two different polynomial functions are shown in the design. <i>4 points</i>
Applications Legend of characteristics provided.	Incomplete <i>0 points</i>	Legend of characteristics provided for both polynomials with many incorrect answers. <i>1 points</i>	Legend of characteristics provided for both polynomials with 3 or 4 incorrect answers. <i>2 points</i>	Legend of characteristics provided for both polynomials with one or two incorrect answers. <i>3 points</i>	Legend of characteristics provided for both polynomials with correct answers. <i>4 points</i>
Thinking Intercepts and local extrema are interpreted in the context of this design.	Incomplete <i>0 points</i>	Thinking Intercepts and local extrema are interpreted in the context of this design with many mistakes. <i>1 points</i>	Thinking Intercepts and local extrema are interpreted in the context of this design with minor mistakes and a few missing steps. <i>2 points</i>	Thinking Intercepts and local extrema are interpreted in the context of this design with some minor mistakes. <i>3 points</i>	Thinking Intercepts and local extrema are interpreted in the context of this design correctly. <i>4 points</i>