

Piecewise functions performance assessment: ASSIGNMENT SHEET (40 POINTS)

1. Using provided graph paper, create a graph of a roller coaster in regards to time and height using linear, absolute value, and quadratic functions. Pretend that your graph is what your roller coaster looks like. This is a rough sketch!
 - a. Note: For your graph, make sure the time is over 30 seconds!
2. Write a function that represents your graph, using *Desmos* to check and see if your function and graph match, making sure all equations in the piecewise function are correct, and adjust your graph accordingly.
3. Fill out the following:

Let's go for a ride on the _____ roller coaster, which is _____ seconds long. The roller coaster begins at _____ feet above ground. After _____ seconds we will reach the maximum height of _____ feet. Therefore, the values for the domain of this roller coaster are _____ and the range is _____. We will be moving slow during the intervals of _____, because we will be going _____ hill, which means these are the intervals of _____. We will be moving very fast during the intervals of _____, because we will be going _____ hill, which means these are the intervals of _____. In function notation, $f(12) = \underline{\hspace{2cm}}$ which means at _____ seconds, the roller coaster is _____ feet above ground. After 24 seconds have passed, we will be at _____ feet above ground.

4. Create an answer key for your function:

Domain and Range:	D:	R:
Local Minima/Maxima	Min:	Max:
Intervals of Increase/Decrease:	Inc:	Dec:
Evaluate	$f(0) =$	$f(10) =$
	$f(20) =$	$f(30) =$

5. Make your graph pretty! Using small poster boards, markers, colored pencils, etc., create a poster of your graph, including the title of your coaster.

6. Hang your poster somewhere around the room. You and your classmates will be going around to each others' coasters, selecting 10 different coasters (other than your own), identifying the domain, range, intervals of increase/decrease, minima, maxima, and evaluation of x-values for each coaster using the following worksheet. Be sure to write down the name of each coaster you evaluate.

Stations activity worksheet		
Coaster 1:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$
Coaster 2:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$
Coaster 3:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$
Coaster 4:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$
Coaster 5:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$

Coaster 6:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$
Coaster 7:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$
Coaster 8:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$
Coaster 9:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$
Coaster 10:	Domain: Range: Interval of Incr: Interval of Decr:	Minima: Maxima: $f(0)=$ $f(10)=$ $f(20)=$ $f(30)=$

7. When completed, please turn in this packet, your rough sketch graph, your piecewise function scratch paper, and your coaster poster.

Project Checklist:

- ❑ Create a rough sketch of my graph using lines resembling linear, quadratic, and absolute value equations. I made sure that my coaster's time of operation was more than 30 seconds.
- ❑ Write piecewise functions that describe my graph. Using *Desmos*, I checked to make sure these piecewise functions were correct before going forward.
- ❑ I filled out the given paragraph that described my graph and checked for correctness.
- ❑ I created an answer key for my graph, including domain, range, intervals of increase and decrease, minima, maxima, and I evaluated my graph for x-values of 0, 10, 20, and 30. I also checked for correctness.
- ❑ I created a clear, concise, and creative final copy of my graph on poster paper using markers, colored pencils, etc. I made sure to put the title of my coaster at the top so my classmates can write down the name.
- ❑ I evaluated 10 of my classmates' graphs during the stations activity. I correctly recorded the answers of domain, range, increase, decrease, minima, maxima, and evaluation of x-values for each graph that I chose, as well as writing down the name of the coaster.
- Turn in this packet, your poster, and your rough sketch graph and piecewise function scratch paper.

Piecewise functions performance assessment: RUBRIC

Elements	Blank/Not turned in 0 pts.	Does Not Meet Expectations 5 pts.	Approaches Expectations 7.5 pts.	Meet Expectations 8.5 pts.	Exceeds Expectations 10 pts.
Paragraph about coaster	The paragraph was not turned in or left blank.	The paragraph about the coaster was either partially completed or yielded great error.	The paragraph about the coaster was filled out and yielded average error.	The paragraph about the coaster was filled out and yielded minimal errors.	The paragraph about the coaster was filled out with no errors.
Answer Key for Own Graph	The answer key was not turned in or left blank	The answer key was either partially completed or yielded great error.	The answer key was filled out and yielded average error.	The answer key was filled out and yielded minimal errors.	The answer key was filled out with no errors.
Stations Activity Worksheet	The stations worksheet was not turned in or left blank.	The stations worksheet was either partially completed or yielded great error.	The stations worksheet was filled out and yielded average error.	The stations worksheet was filled out and yielded minimal errors.	The stations worksheet was filled out with no errors.
Quality of Work (poster)	The poster was not turned in.	The poster was either partially completed, did not directly reflect their description, and/or was illegible/sloppy.	The poster was an average reflection of the description and/or it was slightly illegible/sloppy.	The poster was a good reflection of the description and was legible.	The poster was a perfect reflection of its description, and was legible and creative.

Final Grade : /40

Comments: