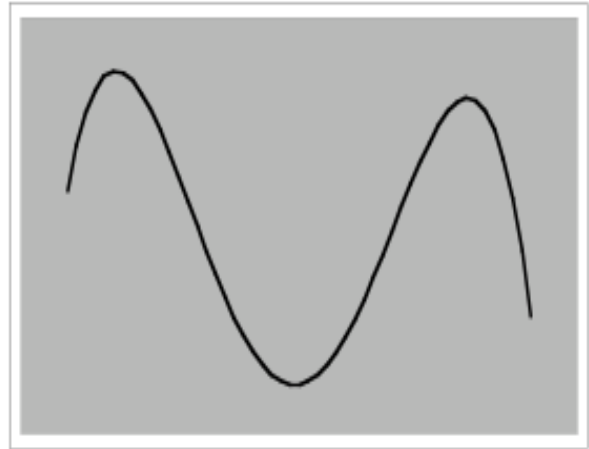
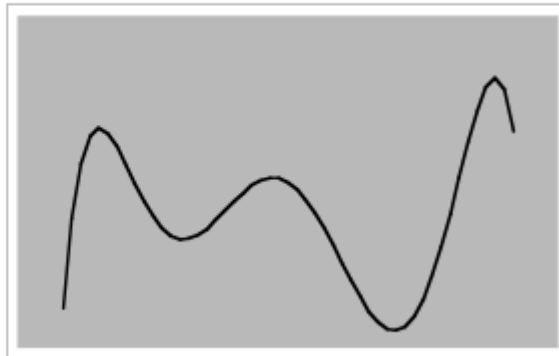


1. What must the leading coefficient and degree be in order to have a design such as the graph to the right? Why is this the case?



$$y = ax^6 + bx^5 + cx^4 + dx^3 + ex^2 + fx + g.$$

Here is an example:



$$y = -.015x^6 + .01x^5 + 14x^4 + 20x^3 - 3000x^2 - 10000x + 300000.$$

2. a) Describe the end behavior of the roller coaster graph above

b) What would happen to the coaster if we changed the $-.015x^6$ to a positive coefficient? Explain how this would be feasible or not for a roller coaster.

- c) What would happen to the coaster if we entirely took out the x^6 term?
Explain how this would be feasible or not for a roller coaster.

- d) What is the height of the coaster when $x = 10$? Show your work.

- 3.) What types of generalizations can you make in regards to which roller coasters are feasible based on their degree and leading coefficients?

- 4) What type of structure would be necessary to allow a roller coaster to have real roots?
