Graphs of Functions

Name: ______________________    Worked With: __________________________

Instructions: It is expected that you have watched the section video and read the book prior to class. If you are asked to work in a group, please take a few minutes to introduce yourselves. Please answer each question as completely as possible. Have fun!

1. Use the graph and your knowledge of functions to answer the following.

   T   F   The x-coordinate of a y-intercept is 0
   T   F   The y-coordinate of an x-intercept is 0
   T   F   A function can have several y-intercepts
   T   F   A function can have several x-intercepts
   T   F   A "real zero" is the same thing as an x-intercept

2. Graphs can also be used to help find the Domain and Range of a function. Use the following graphs to help you determine the Domain and Range of each function. Write your answers using either inequalities or interval notation.

   ![Graphs of Functions](image)

   Domain: __________________________
   Range: __________________________

   Domain: __________________________
   Range: __________________________

   Domain: __________________________
   Range: __________________________

3. Suppose that the track of this roller coaster is a function. With your neighbor, discuss where the function would be increasing or decreasing. Also decide where it would have maximums and minimums.

   ![Photo of the Cannon Ball roller coaster at Lake Winnipesaukah, Georgia. by Randolph Peterson and the Physics Alliance of Chattanooga.](image)

Created by Nolan Mitchell at Chemeketa Community College
Our book says that a function is **even** if \( f(-x) = f(x) \) for every \( x \) in its domain. In other words, if the point \((x, y)\) is on the graph of \( f \), so is the point \((-x, y)\). Even functions are often said to display "symmetry about the y-axis". To test for this symmetry fold the graph in half along the y-axis. If the two halves match up, then it has even symmetry.

A function is **odd** if \( f(-x) = -f(x) \) for every \( x \) in its domain. If the point \((x, y)\) is on the graph of \( f \), so is the point \((-x, -y)\). Odd functions are "symmetric around the origin", meaning that they look the same when rotated 180° around the origin.

4. Use your graphical understanding of odd and even functions to identify the symmetry of the following:

5. Use the definitions given above to determine if \( f(x) = x^2 - 1 \) is even, odd or neither.

6. Decide if \( f(x) = x^3 + 0.01 \) is even, odd or neither.