

Function ART Project

We have learned 18 parent functions so far this semester! (One more to go!) Now it's time to get creative!

OBJECTIVE: Create an original, unique, colorful, and creative picture using transformations of the parent functions we have studied so far this semester.

CRITERIA:

- The two dimensional picture must be a recognizable object, being or scene (not just a geometric design or abstraction).
- The picture must use color and be a unique design – not a copy of another math artist's work. However, pictures can be based on inspiration from other pictures (i.e. based on a painting, photograph or real life inspiration).
- The artwork needs to have a title.
- A minimum of 20 equations of **FUNCTIONS** must be used. Restrict the domains of the functions (as demonstrated in class & screencast) to graph only a piece of a function – i.e. piecewise functions!
- At least 4 functions have to be from the 9 trigonometric functions. Three of these four should be different types.
- 6 of the functions should be different **types** of functions. If two functions only vary by a negative, then use $f_3(x) = -f_2(x)$ notation*.
- Use of horizontal linear functions is permissible but will not count as one of your required equations.
- Artwork must be least 5" X 5", include a list of functions used, and fit on **one*** 8 ½ " X 11" piece of paper. (Art may be mounted on another paper to 'frame' it if desired.) If you have too many equations for one paper, you may include a second sheet but do everyone you can (font size is NOT an issue) to fit equations & artwork are on one page.
- On a separate page, write a **brief** description of your artwork, why you made that choice, and briefly discuss the process you went through to create it. You may write in first person. Maximum length: 1 page, double spaced, 12 pt. font.
- Print out the artwork in color OR add color after printing. Mrs. Cybulski has given permission to print out ONE color copy on her color printer – prior to day project is due! Put your name on the **BACK** of your paper and paperclip to the rubric and turn in.
- Put a digital copy of your TI-Nspire File in I:MMSTC/Homework/FST/FunctionArt. If an online, graphing program was used, put a Word document with the live link to your project. **Do not** turn in an electronic copy of your one-page description/separate list of functions. Your file should be titled 10X_LastName. Replace "X" with your section.
- Use TI-Nspire Calculator/Software, Geometer's Sketchpad or another approved graphing program.

Two types of awards will be given: a People's Choice award voted on by middle school students & freshmen and a Mathematical Art Award that takes into account both artistry and mathematical complexity voted on by sophomores – seniors + teachers. Top winners will receive fantastic prizes with the top designs appearing in the next MMSTC Newsletter

[40 assessment points]

DUE: _____

Many thanks to Andrew Moffat (Toronto, CA) for his ideas!

FUNCTION ART RUBRIC

	EXEMPLARY	ACCOMPLISHED	SATISFACTORY	DEVELOPING
KNOWLEDGE	Picture exceeds basic requirements. 20+ functions used. 6+ different types 4+ trigonometric (3 types) All domains restricted Directions meticulously followed (see criteria)	Picture meets basic requirements. 20 functions used. 6 different types 4 trigonometric (3 types) Most domains restricted Directions generally followed (see criteria)	Picture meets basic requirements. 20 functions used. 6 different types 4 trigonometric (3 types) Few domains restricted Most directions followed (see criteria)	Picture does NOT meet basic requirements. <20 functions used. <6 different types <4 trigonometric (<3 types) No domains restricted Many directions NOT followed (see criteria)
THINKING	A great variety of transformations skillfully used to create picture. Functions well suited / appropriate for picture and blend well together. Skillful notation* of similar functions.	Transformations skillfully used to create picture. Functions well suited / appropriate for picture. Similar functions appropriate noted*.	Basic transformations used to create picture. Functions well suited / appropriate for picture. Some related functions written as directed*.	Very few, very simple transformations used to create picture. Functions not well suited / appropriate for picture. Lack of notation to tie together similar functions.
APPLICATION	Picture is creative, complex, unique, interesting & detailed with thoughtful development. Expert use of color	Picture is creative, unique, complex and interesting. Idea well developed. Use of color adds to final product.	Picture is creative and interesting. Appropriate use of color	Picture is simplistic. Appears to have involved little thought or planning/ development. Superficial use of color
COMMUNICATION	Expertly describes design process. Follows all writing /grammar conventions. Uses mathematical language/vocab in a manner that enhances project.	Describes design process well. Few writing / grammar convention errors. Uses vocabulary appropriate for project.	Adequately describes design process. Minor writing/grammar convention errors. Use of mathematical vocabulary limited.	Discussion of design process incomplete. Errors in writing/grammar conventions impede understanding. Little use of mathematical vocabulary.

COMMENTS: