

Function ART Project

OBJECTIVE: Create an original, unique, colorful, and creative picture using transformations of the parent functions we have studied so far this semester using your TI-Nspire software. [50 assessment points]

CRITERIA:

- The two dimensional picture must be a recognizable object, being or scene (not just a geometric design or abstraction).
- Equations **MUST** be based on knowledge of transformations (translating, scaling & reflecting). Equation format must demonstrate that conceptual understanding. Format of equations consistent with format used in class. $y = b * f\left(\frac{x-h}{a}\right) + k$. If two functions only vary by a negative or a vertical translator, then use $f_3(x) = -f_2(x)$ or $f_{10}(x) = f_9(x) + k$ notation*. Projects that fail to do this will have points deducted. When in doubt ASK.
- 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 25 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. Limited use of horizontal linear functions is permissible but will **not** count as one of your required equations.
- **List of functions** must CLEARLY identify the # of functions used, label the different types of functions (only label the function type the FIRST time it is used). Use equation editor to make your functions easy to read; do not just copy/paste from the software**. For example: $y = \tan\left(\frac{x-3}{5/\pi}\right) + 2, 6.8 < x < 9.5$ **NOT** $f_{20}(x) = \text{piecewise}(\tan(((x-3)/((5)/(\pi)))) + 2, 6.8 \leq x \leq 9.5)$
- Artwork must fit on an 8 ½” X 11” piece of paper and have a TITLE. (Art may be mounted on another paper to ‘frame’ it if desired.) A separate sheet will list all of your functions. Repeat the title at the top and be sure that equations are not too small to read. Number your functions and label the type of function the first time that function appears in the list.
- On a separate page, write a **brief** description of your artwork and the design process. This is your opportunity to tell me anything about the creation of your project that cannot be seen just by examining 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 art and paperclip to the rubric and turn in.
- Put a digital copy of your TI-Nspire File in I:MMSTC/Homework/FST/FunctionArt. **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.

Work will be displayed in the hallway for a People’s Choice Award Contest. Any student or adult in the building will be able to vote. Top winners will receive fantastic prizes with the top designs appearing in the next MMSTC Newsletter

FUNCTION ART RUBRIC

	EXEMPLARY	ACCOMPLISHED	SATISFACTORY	DEVELOPING
KNOWLEDGE	25+ functions used. 6+ different types 4+ trigonometric (3 types) Clever restrictions of domains. Directions followed. Equations in transformation format and reflect high level knowledge & application of transformations.	25 functions used. 6 different types 4 trigonometric (3 types) Domains appropriately restricted. Directions followed. Equations in transformation format and reflect knowledge & application of transformations.	25 functions used. 6 different types 4 trigonometric (3 types) Domains appropriately restricted. Some directions not followed (see criteria). A few equations not in transformation format. (x-scalar)	<25 functions used. <6 different types <4 trigonometric (<3 types) Domains inappropriate for art Directions NOT followed (see criteria). Many or most equations not in transformation format - Indicate lack of knowledge about and/or use of transformations.
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.	Most equations contain multiple transformations in each equation. Functions well suited / appropriate for picture. Similar functions appropriate noted*.	Some equations have multiple transformations in each equation. Functions well suited / appropriate for picture. Some related functions written as directed*.	Equations do not reflect underlying concept of transformations. Functions not well suited / appropriate for picture. Lack of notation to tie together similar functions.*
APPLICATION	Picture is creative, clever, 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. Planning evident. Appropriate use of color.	Picture is simplistic. Appears to have involved little thought or planning/ development. Superficial/lack of use of color.
COMMUNICATION	Gives insight into design/creation process. Follows all writing /grammar conventions. Use of math language adds to discussion. Function list formatted as requested.**	Describes design/creation process well. Few writing / grammar convention errors. Proper use of math vocabulary. List of functions formatted as requested.**	Adequately describes design/creation process. Minor writing/grammar convention errors. Some use of math vocabulary. Most of function list in requested format**	Discussion of design/creation process incomplete/missing. Multiple errors in writing/grammar conventions. Lack of use of math vocab. Some or all list of functions NOT formatted as requested**

COMMENTS: