PreCalculus Graphing Project

You and your partner will have today and tomorrow in class to be creative and mathematical in designing a picture using parent and transformed equations along with piece-wise conditions. You will graph the picture on the x-y plane, with appropriate domain restrictions using the online graphing calculator program Desmos. (www.desmos.com/calculator)
You will have until **Wednesday, January 9th** to finish and submit the project (see "Project Submission" below). No project will be accepted after Friday, January 11th. This 25 point project's grade will count in the Minor Assessment category.

GRAPH REQUIREMENTS: Your project must include the following:

- **At least 4 *different*** equations
- **At most 10** equations
- **At least one *trigonometric function*** (sine, cosine, tangent, cosecant, secant, cotangent)
- **At least two *curved functions*** (parabolic, reciprocal, square-root, cubic). You may also use a circle [e.g. $y = \pm\sqrt{(r^2 - x^2)}$].
- **At least one *linear function*** (absolute value, greatest integer/step, linear). You may include vertical lines but remember these are not functions.
- An interesting and **colorful** graph/picture
- An accurate, completed table listing each function and its domain and range (in interval notation). **Each partner** needs to submit his/her own hard copy of the table of functions and own copy of colored version of the graph.

PROJECT SUBMISSION:

- Submit your graph art: From the Desmos.com website, click on "Share"  (top right), Copy the link and make a post in our Google Classroom so we can all view each other's work
- From the Desmos.com website, click on "Share"  then "Export Image" to download the image of your graph art. Now, to make it more colorful you can either:
  - Print the graph art and color with various art supplies
  - Paste or insert the image into OneNote and use the pens to color it (FYI: highlighters will not print in color correctly).
- Submit a printed hard copy colorful version of your graph art for the classroom walls…
  EACH STUDENT must submit his/her own colored graph.
- Submit a printed hard copy of your function table…
  EACH STUDENT must submit his/her own function table.

Due Date: Wednesday, January 9th.
Last day to submit: *Friday, January 11 (10% subtracted from grade for each day the project is late as per school policy)*

(see "INSTRUCTIONS FOR ART CREATION using DESMOS:" on reverse side)

INSTRUCTIONS FOR ART CREATION using DESMOS:

You will create your graph art using Desmos (www.desmos.com/calculator). This graphing website is very intuitive to learn and use; however, below is a link to a user's guide in case you have questions:
https://s3.amazonaws.com/desmos/Desmos_Calculator_User_Guide.pdf

- Use your school email's Google Account to sign in. This will allow you to save your graph.
- To graph an equation, type the equation into the next line on the left (**e.g.** $y = 3x + 1$).
- To restrict the domain, type your restricted domain in set notation after the function
  e.g. $y = 3x + 1\{-2 < x < 4\}$.
  https://support.desmos.com/hc/en-us/articles/203206915-Domain-and-Range-Restrictions
- Click along your graph in order to identify specific points on the function (to help you identify and choose your domain and range). It may be more beneficial to fill in the function table as you create your art, instead of waiting until the end.
- Long-hold the colored icon to the left of the expression OR click on the GEAR that says "Edit List" above your equations in order to change the color or line style of each equation.
  https://support.desmos.com/hc/en-us/articles/202529149-Change-Color-or-Style
- Make sure you NAME and SAVE YOUR GRAPH to the desmos site since this project will span a couple of days. This is why you logged in using your school email/google account.
- When you EXPORT your graph, make sure you know where it is being saved! A file downloaded to a chromebook may need to be uploaded into your google drive for future access.