

## Let the Artist in You Shine!

### 1 Beginning Steps

1. Go to <https://www.desmos.com/calculator> and create a free account. This is necessary so that you can save your work. Be sure your username and password is school appropriate, and that you make note of it.
2. Use this link below if you have questions about how to create a particular graph.
  - a. [https://desmos.s3.amazonaws.com/Desmos\\_User\\_Guide.pdf](https://desmos.s3.amazonaws.com/Desmos_User_Guide.pdf)

HINT: Make sure that you read about sliders, they will help you quite a bit and can be used with either variables in the function or in the domain limits.
3. To limit the domain of a function:
  - a. Type the function in, and then in curly brackets, type the limitation. For example if I want the quadratic parent function just between -2 and 2, I type:  $y = x^2\{-2 \leq x \leq 2\}$ . Try it and see how it works.
4. To shade a graph write the function as an inequality.
5. Refer to the attached list of parent graphs (I added a few that we haven't learned yet, but that you may want to try). You can use others as well!

Here are some examples to check out! <https://www.desmos.com/art>

### 2 Plan Your Art

1. **Make sure that you READ THE RUBRIC so that you understand the project requirements.**
2. What, you say? You are not an artist? OK ... let's brainstorm. Maybe it is a logo for your favorite school or team. Maybe it is a simple rendition of a piece of famous art. Maybe it is a cartoon character that you want to bring to life.
3. Create a simple pencil sketch of your planned art on graph paper. Here's the catch ... as you create your sketch, think about the parent functions you have learned (and their transformations). Some of you may prefer to try out ideas directly in DESMOS rather than starting with a sketch...it's up to you!

### 3 Create your Art on Desmos

1. Log in so that you will be able to save your work.
2. Note that you can vary the window if you'd like.
3. You can change the color of the lines you use. Hold your cursor down on the color button next to the equation and a menu of colors will pop up. You can change your line from solid to dotted, and change the color.

#### 4 Submit your Work

When your artwork is complete, print out your completed artwork and list of equations used.

#### 5. Reflect on your work

Reflect on your work. Include the following pieces of information. Print out your reflection or email it to me using a filename that is in the format AGaylordreflection.com

- Your name, date, class period
- The Title of your picture
- A list of how many of each type of function you used
- How you chose the topic of your art with an explanation of why that topic
- What you found interesting about creating art on Desmos
- What you found difficult in creating art on Desmos
- How you would change this project for students next year.

#### Parent Function Examples

For all functions listed below,  $m$ ,  $a$ ,  $b$ ,  $h$ ,  $k$  and  $r$  represent constants (real numbers of your choosing)

- $Y = mx + b$  (linear)
- $Y = a$  (horizontal)
- $X = a$  (vertical)
- $Y = x^2$  (basic parabola) OR Vertex form:  $y = a(x - h)^2 + k$  \*\*Remember :  $(h,k)$  is the vertex and  $a$  determines width,  $-a$  turns it upside down\*\*
- “Sideways” parabola  $x = y^2$
- Exponential  $y = a(b)^x$  when  $b > 1$ , growth, when  $0 < b < 1$  decay.  $a$  is always positive
- Circle  $x^2 + y^2 = r^2$  where  $r$  is the radius. To shift the circle try:  $(x - h)^2 + (y - k)^2 = r^2$
- Hyperbola  $y = \frac{a}{x}$

**DO NOT FORGET INEQUALITIES WITH ALL OF THE ABOVE – they’ll give you shading**

Try  $y \geq x^2$ ,  $y > (x - 3)^2 + 4$  etc. & To color in a circle  $(x - h)^2 + (y - k)^2 \leq r$

RUBRIC  
Desmos Graphing Project

	10 – 9	8 – 7	6 – 0	Score
Uses 5 out of the 8 parent functions	Uses 6 or more than 5 function types	Uses 5 out of 8 parent functions	Uses less than 5 function types	
Includes at least two inequalities so that the graph has shaded portions	Uses 3 or more inequalities	Uses at least 2 inequalities	Uses less than 2 inequalities	
Includes at least 15 graphs (note that while sliders are extremely useful, they do not count towards the number of graphs)	Uses 20 or more graphs	Uses at least 15 graphs	Uses less than 15 graphs	
Creativity and attention to detail	Excellent creativity and attention to detail	Very good creativity and attention to detail	Fair creativity and attention to detail	
Completes and submits the reflection	Max 5 points			

Total score (out of 45 points): \_\_\_\_\_