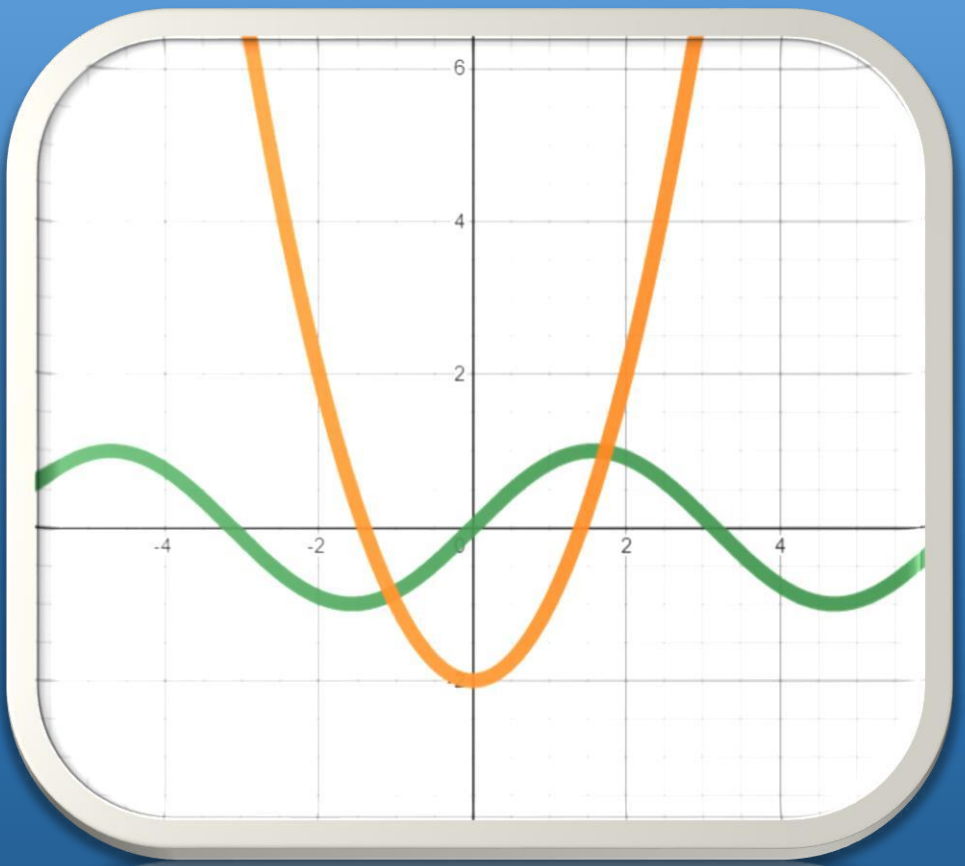
GDC - SHADNAGAR

Ranga Reddy Dist

JIGNASA - Student Study Project

Logo Design with Mathematical Shapes (Curves)



Department of Mathematics

Government Degree College

Shadnagar – Ranga Reddy (Dist)

Student Study Projecton

”Logo Design with Mathematical Shapes”

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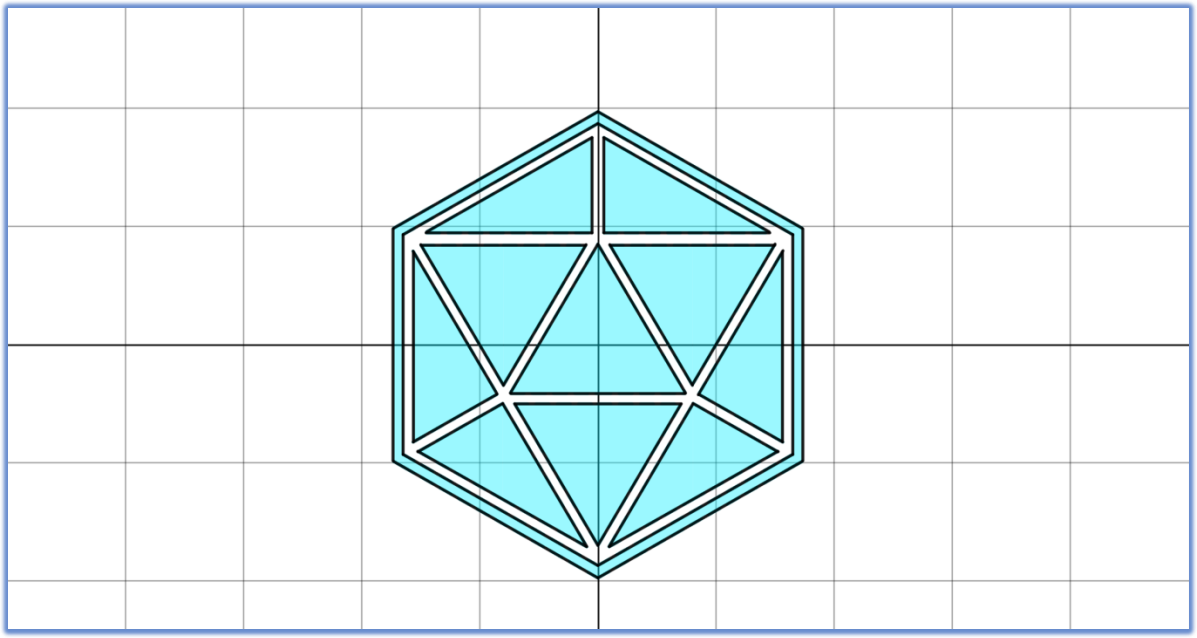
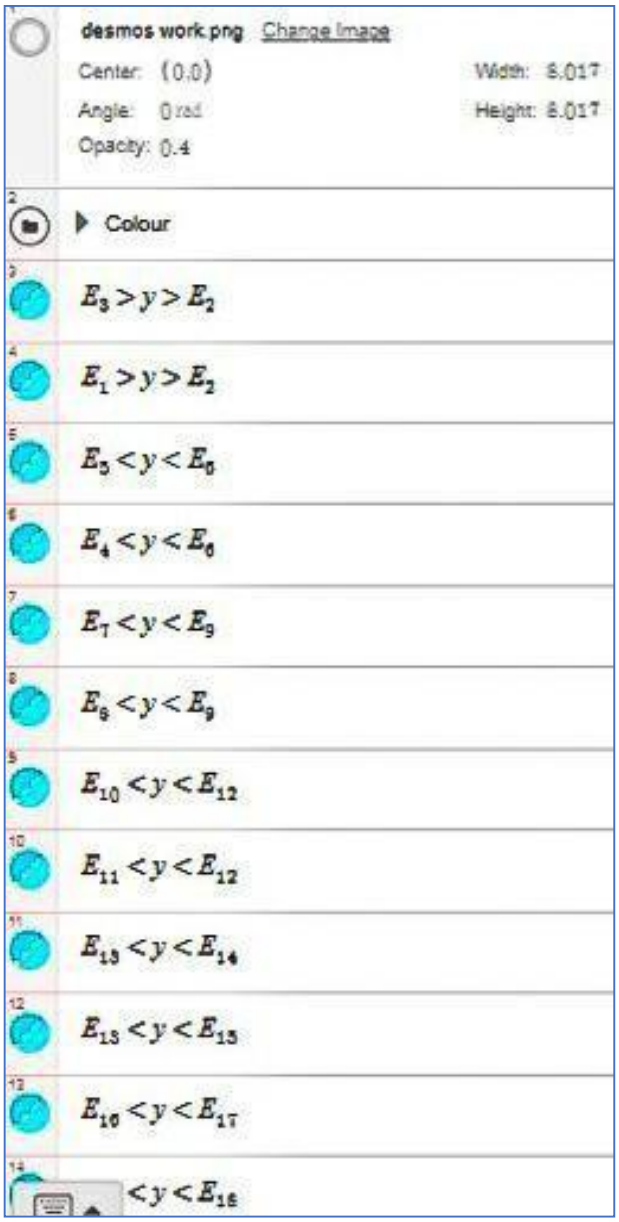
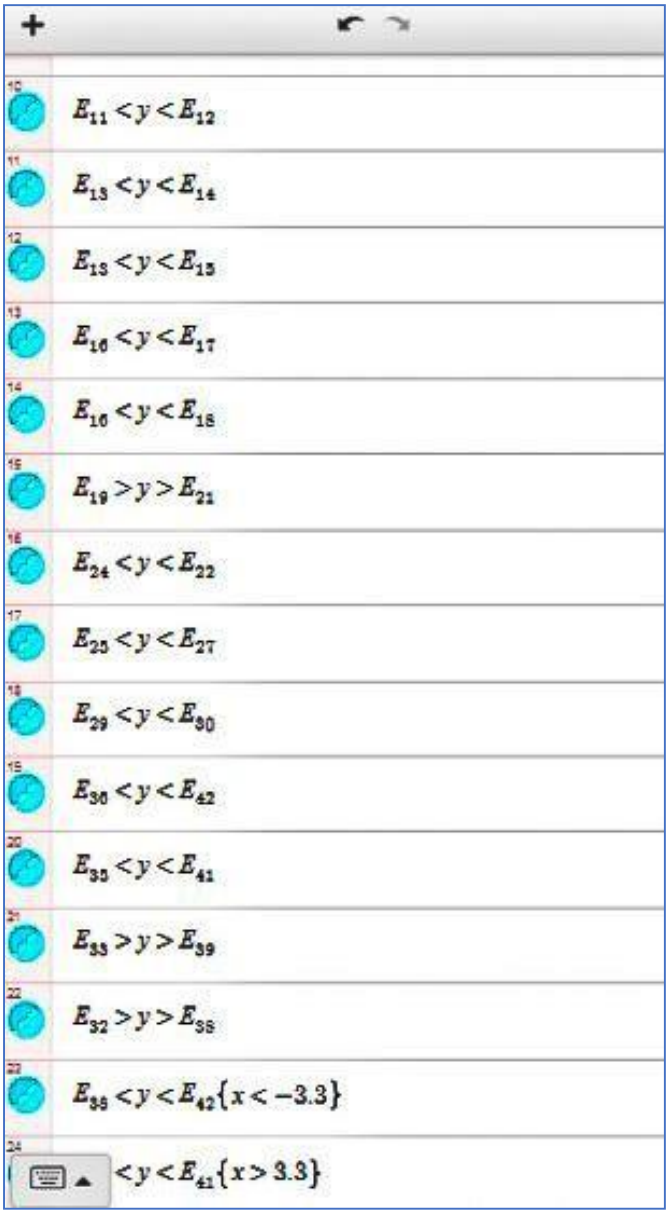
Name of the Project: **"Logo Design with Mathematical Shapes"**

- **Formulae used: y = mx + b; y=k; x=k**
- **Procedure:**
  - I took a logo of a You tuber who explained the working of Desmos calculator and pasted it as a base for my work.
  - I used the "y=k" Formula and placed the horizontal lines.
  - I used the "x=k" formula and placed the vertical lines.
  - For the slopes, the "y = mx + b" equations were used to create the lines of the triangles.
  - After all the lines have completed, I placed domains for the lines. By those domains, the endpoints of the slopes were made.
  - After all the points of ends were connected, I used the same formulas of the lines with the ">" and "<" symbols, I created the area, which is given by the line and colored the area.
    for some big equations, I named them I'm by choosing the area between them using symbols are you color the area in between.
  - For better appearance I moved the color formulas over the line formulas.
  - At last, I colored the areas with blue and the lines with black.

Out Come:




desmos work.png Change Image
Center: (0,0)
Width: 8.017
Angle: 0 rad
Height: 8.017
Opacity: 0.4
Colour
$E_3 > y > E_2$
$E_1 > y > E_2$
$E_5 < y < E_6$
$E_4 < y < E_6$
$E_7 < y < E_9$
$E_8 < y < E_9$
$E_{10} < y < E_{12}$
$E_{11} < y < E_{12}$
$E_{13} < y < E_{14}$
$E_{13} < y < E_{15}$
$E_{16} < y < E_{17}$
$< y < E_{16}$


$E_{11} < y < E_{12}$
$E_{13} < y < E_{14}$
$E_{13} < y < E_{15}$
$E_{16} < y < E_{17}$
$E_{16} < y < E_{18}$
$E_{19} > y > E_{21}$
$E_{24} < y < E_{22}$
$E_{25} < y < E_{27}$
$E_{29} < y < E_{30}$
$E_{36} < y < E_{42}$
$E_{35} < y < E_{41}$
$E_{33} > y > E_{39}$
$E_{32} > y > E_{38}$
$E_{39} < y < E_{42}\{x < -3.3\}$
$< y < E_{41}\{x > 3.3\}$

$$E_1 = 1.7x + 1.7\{-1.484 < x < 0\}$$

$$E_5 = 1.7x + 2.03\{-1.6 < x < -0.2\}$$

$$E_6 = 1.7x + -3.4\{1.6 < x < 3\}$$

$$E_{22} = 1.7x - 3.74\{1.7 < x < 3.134\}$$

$$E_3 = -1.7x + 1.7\{0 < x < 1.484\}$$

$$E_4 = -1.7x + -3.41\{-3 < x < -1.6\}$$

$$E_{19} = -1.7x + -3.74\{-3.13 < x < -1.71\}$$

$$E_{21} = 0.569x + 0.13\{-3.13 < x < -1.71\}$$

$$E_{24} = -0.569x + 0.13\{1.71 < x < 3.13\}$$

$$E_{17} = -0.569x + -0.08\{1.61 < x < 3.05\}$$

$$E_{15} = 0.569x + -0.08\{-3.05 < x < -1.61\}$$

$$E_{14} = -1.7x - 3.74\{-1.61 < x < -0.19\}$$

$$E_{13} = -0.565x - 3.53\{-3.05 < x < -0.19\}$$

$$E_{16} = 0.565x - 3.53\{0.19 < x < 3.05\}$$

$$= -1.7x - 3.4\{-1.41 < x < -0\}$$

$$E_{10} = -1.7x - 3.4\{-1.41 < x < -0\}$$

$$E_{11} = 1.7x - 3.4\{0 < x < 1.41\}$$

$$E_{18} = 1.7x - 3.74\{0.19 < x < 1.61\}$$

$$E_7 = -1.7x + 2.03\{0.2 < x < 1.6\}$$

$$E_{27} = 0.57x + 3.56\{-2.9 < x < -0.1\}$$

$$E_{42} = 0.57x + 3.94\{-3.46 < x < 0\}$$

$$E_{39} = 0.57x - 3.95\{0 < x < 3.46\}$$

$$E_{41} = -0.57x + 3.94\{0 < x < 3.46\}$$

$$E_{38} = -0.57x - 3.95\{-3.46 < x < 0\}$$

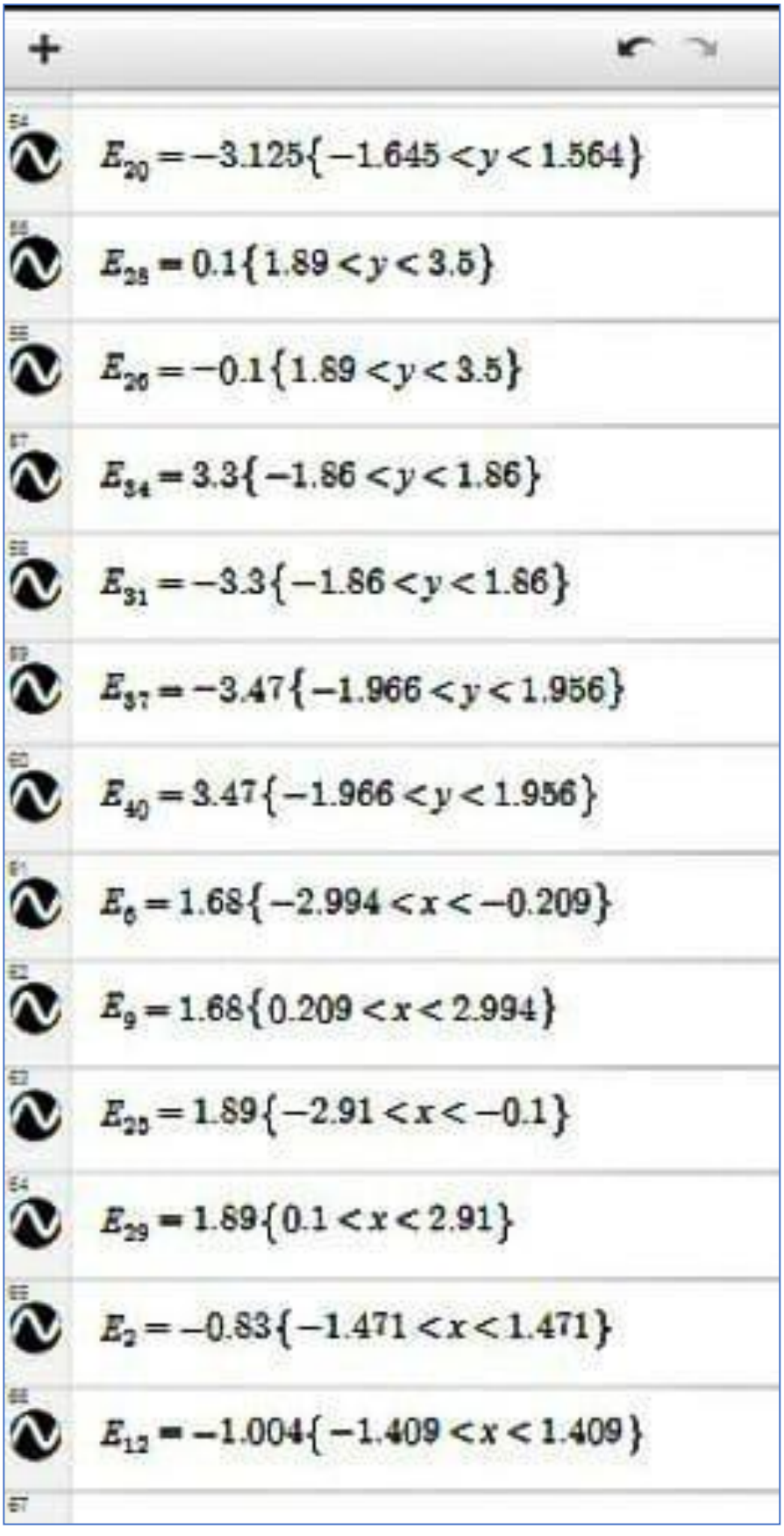
$$E_{32} = -0.57x - 3.74\{-3.3 < x < 0\}$$

$$E_{33} = 0.57x - 3.74\{0 < x < 3.3\}$$

$$E_{36} = 0.57x + 3.74\{-3.3 < x < 0\}$$

$$E_{35} = -0.57x + 3.74\{0 < x < 3.3\}$$

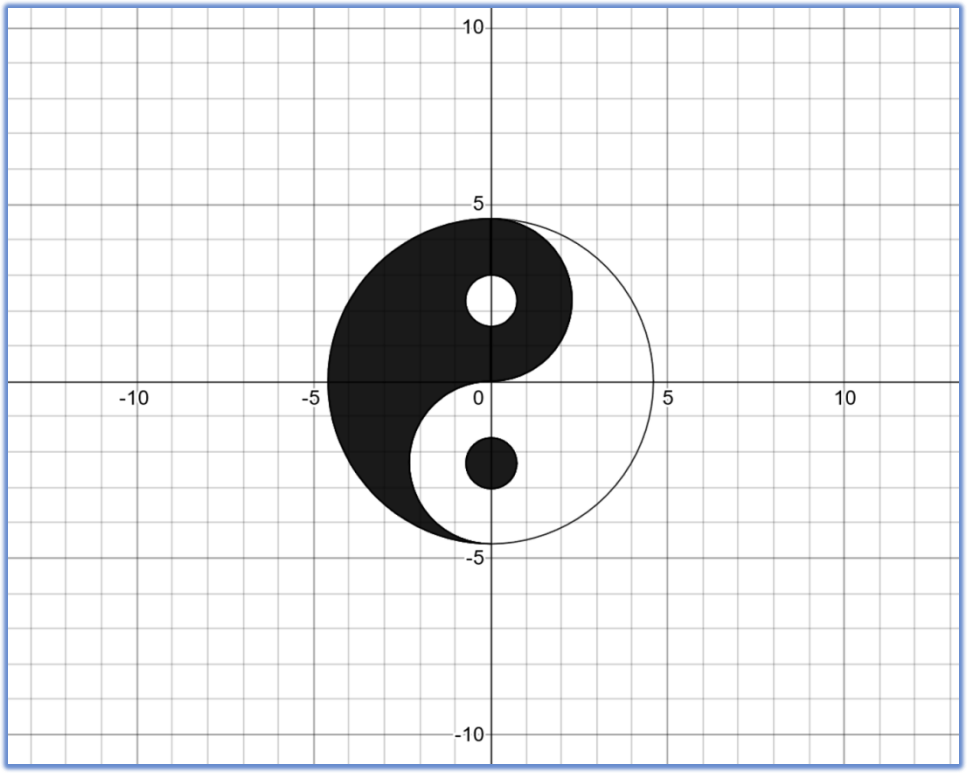
$$E_{30} = -0.57x + 3.56\{0.1 < x < 2.9\}$$


$E_{20} = -3.125\{-1.645 < y < 1.564\}$
$E_{28} = 0.1\{1.89 < y < 3.5\}$
$E_{26} = -0.1\{1.89 < y < 3.5\}$
$E_{34} = 3.3\{-1.86 < y < 1.86\}$
$E_{31} = -3.3\{-1.86 < y < 1.86\}$
$E_{37} = -3.47\{-1.966 < y < 1.956\}$
$E_{40} = 3.47\{-1.966 < y < 1.956\}$
$E_6 = 1.68\{-2.994 < x < -0.209\}$
$E_9 = 1.68\{0.209 < x < 2.994\}$
$E_{25} = 1.89\{-2.91 < x < -0.1\}$
$E_{29} = 1.89\{0.1 < x < 2.91\}$
$E_2 = -0.83\{-1.471 < x < 1.471\}$
$E_{12} = -1.004\{-1.409 < x < 1.409\}$

Project: Yin Yang

- **Formula used: Circle Equation**
- **Procedure**:
  - I took the Yin Ysng picture and placed it for the base of my work.
  - By using circle equation, I created the outer circle of the picture.
  - By using the same equation, the inner circles were made.
  - But for the semi circles the circles created were cut in two halves by using the domain.
  - After all the circles were placed, they were coloured, using the “> and <” symbols In each of it circle equations and domain.
  - Then I moved the colors over the lines for better appearance.

Out Come:



1

17-179453_yin-yang-png.pngb Change Image

Center: (0,0) Width: 9.95

Angle: 0 rad Height: 9.95

Opacity: 0.4

2 colourx

3 $(2.3)^2 \geq (x-0)^2 + (y-2.3)^2 \{x>0\} \left\{(0.726)^2 < (x-0.02)^2 + (y-2.278)^2\right\}$

4 $(2.3)^2 \leq (x-0)^2 + (y+2.3)^2 \{x<0\} \left\{4.6^2 > x^2 + y^2\right\} \left\{(0.726)^2 < (x-0.02)^2 + (y-2.278)^2\right\}$

5 $(0.72)^2 \geq (x-0.02)^2 + (y+2.32)^2$

6 $4.6^2 = x^2 + y^2$

7 $(0.726)^2 = (x-0.02)^2 + (y-2.278)^2$

8 $(0.72)^2 = (x-0.02)^2 + (y+2.32)^2$

9 $(2.3)^2 = (x-0)^2 + (y-2.3)^2 \{x>0\}$

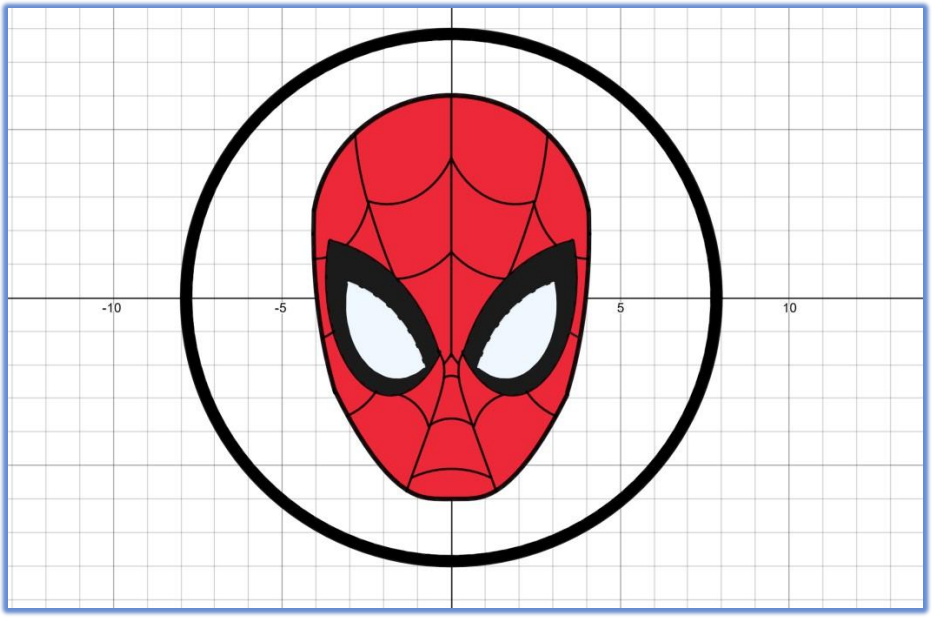
10 $(2.3)^2 = (x-0)^2 + (y+2.3)^2 \{x<0\}$

11

Project: Spiderman

- **Formula used: Circle Equation, Parabola Equation, Ellipse Equation**
- **Procedure**:
  - To start with, we placed Spiderman picture on the graph as a beast of my work.
  - By using parabola, ellipse and circle equation, The outline of the face was made.
  - I then created a folder of equations, for a separate work with eyes.
  - For the eye, two ellipses were cut Using domain and structure was formed.
  - I replicated the first drawn high and drawn the second eye.
  - The web structure on the mask was created by circles I never cut into shapes using domain.
  - To colour, I took the outer equation s with symbols and please the inner equations of eyes and domain.
  - To color the eyes, I used the creations with symbols and external outline equations as domain.
  - Then the colour equations were moved under the line equations for better appearance.
  - Even folder created for eyes was moved to the top for better appearance.

Out Come:



$$x^2+y^2=7.7^2$$

$$x^2+y^2>7.7^2\left\{x^2+y^2<8^2\right\}$$

colour

$$(x-0)^2+(y-1.9)^2<4.12^2\left\{\frac{(x+4.4)^2}{7}+\frac{(y+3.3)^2}{10}>1.6^2\right\}\left\{\frac{(x-4.4)^2}{7}+\frac{(y+3.3)^2}{10}>1.6^2\right\}\left\{\frac{(x-0)^2}{4.05^2}+\frac{(y-1.9)^2}{8.7^2}<1^2+(0.0139)\right\}$$

$$\frac{(x+0)^2}{4.05^2}+\frac{(y-1.9)^2}{8.7^2}<1^2+(0.0139)\left\{\frac{(x-4.4)^2}{7}+\frac{(y+3.3)^2}{10}<1.6^2\right\}\left\{\frac{(x-1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}>1.1^2\right\}\left\{y>0.3\sqrt{1.8+(x-(0.02))^4}-6.4\right\}$$

$$y>0.3\sqrt{1.8+(x-(0.02))^4}-6.4\left\{\frac{(x-0)^2}{4.05^2}+\frac{(y-1.9)^2}{8.7^2}<1^2+(0.0139)\right\}\left\{\frac{(x+1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}>1.1^2\right\}\left\{\frac{(x-1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}>1.1^2\right\}\{y<2\}$$

$$\frac{(x-0)^2}{4.05^2}+\frac{(y-1.9)^2}{8.7^2}<1^2+(0.0139)\left\{\frac{(x+4.4)^2}{7}+\frac{(y+3.3)^2}{10}<1.6^2\right\}\left\{\frac{(x+1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}>1.1^2\right\}\left\{y>0.3\sqrt{1.8+(x-(0.02))^4}-6.4\right\}$$

$$\frac{(x-0)^2}{4.05^2}+\frac{(y-1.9)^2}{8.7^2}=1^2+(0.0139)\{-2.816<y<2.59\}$$

$$y=0.3\sqrt{1.8+(x-(0.02))^4}-6.4\{-3.454<x<3.43\}$$

$$(x-0)^2+(y-1.9)^2=4.12^2\{-4.056<x<4.056\}\{y>2\}$$

$$\frac{(x+1.9)^2}{0.9}+\frac{(y-5.5)^2}{1.4}=2.3^2\{0>x>-2.436\}\{y<5\}$$

+

$$\frac{(x-1.9)^2}{0.9}+\frac{(y-5.5)^2}{1.4}=2.3^2\{0<x<2.436\}\{y<5\}$$

$$\frac{(x-4)^2}{1.4}+\frac{(y-3.7)^2}{3.3}=1.4^2\{4.063>x>2.435\}\{y<3\}$$

$$\frac{(x+4)^2}{1.4}+\frac{(y-3.7)^2}{3.3}=1.4^2\{-4.063<x<-2.435\}\{y<3\}$$

$$\frac{(x-1.7)^2}{1.9}+\frac{(y-3.9)^2}{3.1}=1.9^2\{1.652>x>0\}\{y<2\}$$

$$\frac{(x+1.7)^2}{1.9}+\frac{(y-3.9)^2}{3.1}=1.9^2\{-1.652<x<0\}\{y<2\}$$

$$\frac{(x-0.002)^2}{(-0.21)^2}-\frac{(y+2.2)^2}{0.57^2}=1\{-5.773<y<-1.96\}$$

$$\frac{(x)^2}{0.2^2}-\frac{(y+2.1)^2}{0.321^2}=1\{-1.96<y<0.555\}$$

$$y=0.68(x)^2-1.3\{2.876>y>0.555\}$$

$$\frac{(x)^2}{2.3}+\frac{(y-5.7)^2}{8.6}=1.9^2\{2.875<y<4.878\}$$

$$x=0\{-1.753<y<6.02\}$$

$$\frac{(x-1.9)^2}{2}+\frac{(y+4.2)^2}{2.3}=0.9^2\{0.675<x<1.635\}\{y>-4\}$$

$$\frac{(x+1.9)^2}{2}+\frac{(y+4.2)^2}{2.3}=0.9^2\{-0.675>x>-1.635\}\{y>-4\}$$

$$(x)^2+(y+4.7)^2=1.1^2\{-0.621<x<0.626\}\{y>-4\}$$

$$\frac{x^2}{1.4}+(y+7.1)^2=2^2\{-1.184<x<1.189\}\{y>-6\}$$

$$x^2+\frac{(y+5.7)^2}{7.9}=1.2^2\{-0.219<x<0.235\}\{y>-3\}$$

eyes

$$\frac{(x-1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}=1.1^2\{0.359<x\}\{y<1.684\}$$

$$\frac{(x+1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}=1.1^2\{-0.359>x\}\{y<1.684\}$$

$$\frac{(x-1.6)^2}{4.7}+\frac{(y+.2)^2}{10}=0.7^2\{0.796<x\}\{y<0.449\}$$

$$\frac{(x+1.6)^2}{4.7}+\frac{(y+.2)^2}{10}=0.7^2\{-0.796>x\}\{y<0.449\}$$

$$\frac{(x-4.4)^2}{7}+\frac{(y+3.3)^2}{10}=1.6^2\{0.388<x<3.583\}\{y>-2\}$$

$$\frac{(x-4.4)^2}{7}+\frac{(y+3.3)^2}{10}=1.6^2\{0.388<x<3.583\}\{y>-2\}$$

$$\frac{(x+4.4)^2}{7}+\frac{(y+3.3)^2}{10}=1.6^2\{-0.388>x>-3.583\}\{y>-2\}$$

$$\frac{(x-4)^2}{6.9}+\frac{(y+3.5)^2}{10}=1.3^2\{0.796<x<3.051\}\{y>-3\}$$

$$\frac{(x+4)^2}{6.9}+\frac{(y+3.5)^2}{10}=1.3^2\{-0.796>x>-3.051\}\{y>-3\}$$

$$\frac{(x-1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}<1.1^2\left\{\frac{(x-1.6)^2}{4.7}+\frac{(y+.2)^2}{10}>0.7^2\right\}\left\{\frac{(x-4.4)^2}{7}+\frac{(y+3.3)^2}{10}<1.6^2\{x>-3.83\}\{y>-5\}\right\}$$

$$\frac{(x+1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}<1.1^2\left\{\frac{(x+1.6)^2}{4.7}+\frac{(y+.2)^2}{10}>0.7^2\right\}\left\{\frac{(x+4.4)^2}{7}+\frac{(y+3.3)^2}{10}<1.6^2\{x>-3.83\}\{y>-5\}\right\}$$

$$\frac{(x+4.4)^2}{7}+\frac{(y+3.3)^2}{10}<1.6^2\{-0.388>x>-3.583\}\{y>-30\}\left\{\frac{(x+4)^2}{6.9}+\frac{(y+3.5)^2}{10}>1.3^2\right\}\left\{\frac{(x+1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}<1.1^2\right\}$$

$$\frac{(x-4.4)^2}{7}+\frac{(y+3.3)^2}{10}<1.6^2\{0.388<x<3.583\}\{y>-30\}\left\{\frac{(x-4)^2}{6.9}+\frac{(y+3.5)^2}{10}>1.3^2\right\}\left\{\frac{(x-1.8)^2}{2.9}+\frac{(y-0.6)^2}{10}<1.1^2\right\}$$

$$\frac{(x+4)^2}{6.9}+\frac{(y+3.5)^2}{10}<1.3^2\left\{\frac{(x+1.6)^2}{4.7}+\frac{(y+.2)^2}{10}<0.7^2\right\}$$

$$\frac{(x-4)^2}{6.9}+\frac{(y+3.5)^2}{10}<1.3^2\left\{\frac{(x-1.6)^2}{4.7}+\frac{(y+.2)^2}{10}<0.7^2\right\}$$

$$(x-4.3)^2+(y-0)^2=1.3^2\{3.464<x<3.813\}\{y<0\}$$

$$(x+4.3)^2+(y-0)^2=1.3^2\{-3.464>x>-3.813\}\{y<0\}$$

$$(x-3.9)^2+(y+1.7)^2=2^2\{2.222<x<3.097\}\{-2.789>y\}$$

$$(x+3.9)^2+(y+1.7)^2=2^2\{-2.222>x>-3.097\}\{-2.789>y\}$$

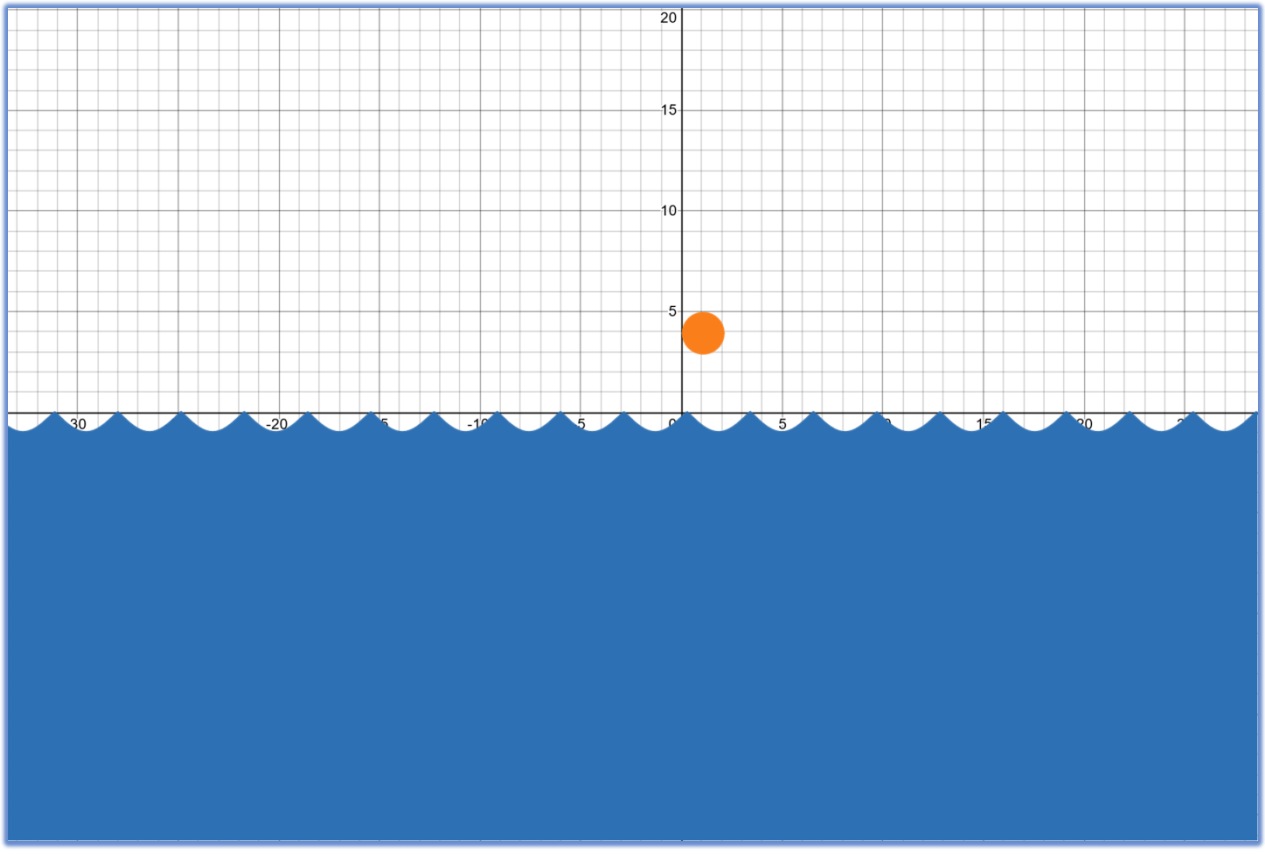
$$(x+1.4)^2+(y+0.9)^2=1.6^2\{-0.223<x<0\}\{y<-1.675\}$$

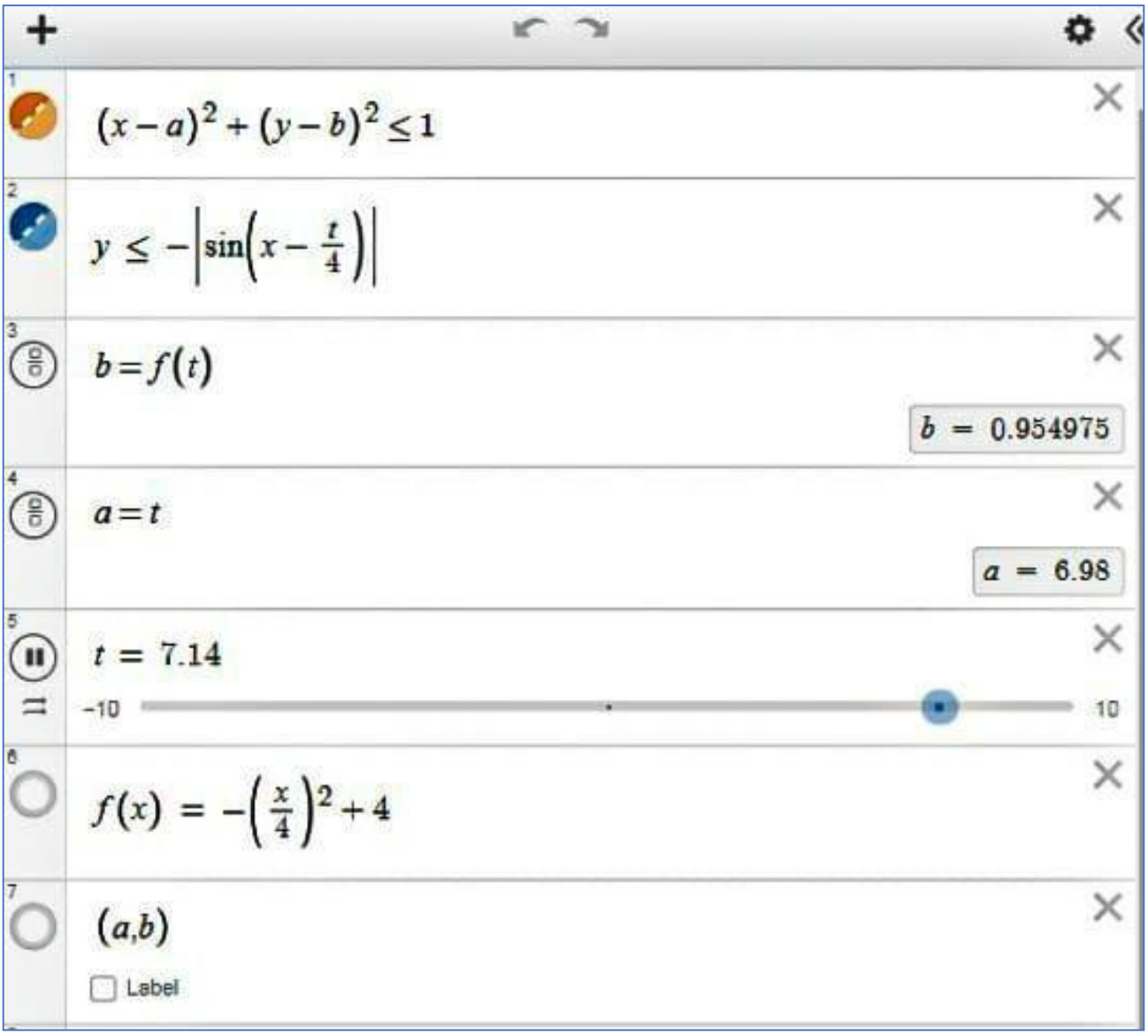
$$(x-1.4)^2+(y+0.9)^2=1.6^2\{0.223>x>0\}\{y<-1.675\}$$

Project: Sunrise

- **Formula used:**
- **Procedure:**
  - At first, I have created a circular area with a circle equation
  - for the sun. Then coloured it.
  - For the sea I have initiated a sine function and coloured it blue.
  - Both the sun and sea equations contains co-efficient (a,b) , with the same coefficients another curve is drawn, this equation named T.
  - Both the sun and sea equations depend upon equation T.
  - As the values of equation T are played, the sun and sea move along the values of equation T.
  - **Thttps://www.desmos.com/calculator/nvhhgtd5n2**

Out Come:

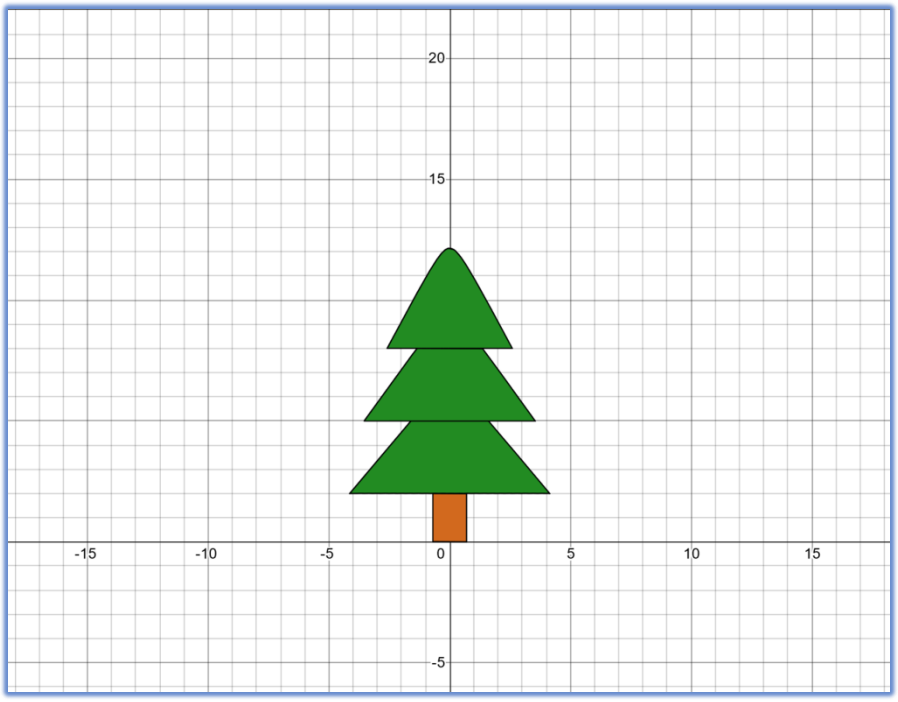



1
$(x-a)^2+(y-b)^2\le 1$
2
$y\le -\left|\sin\left(x-\frac{t}{4}\right)\right|$
3
$b=f(t)$
$b = 0.954975$
4
$a=t$
$a = 6.98$
5
$t = 7.14$
-10
10
6
$f(x)=-\left(\frac{x}{4}\right)^2+4$
7
(a,b)
Label

Project: Tree

- **Formula used:**
- **Procedure:**
  - At first, an equation of is placed and it is adjusted to form a small angle. Then the equation is given domain and cut to a place of 8.
  - A y=k is placed, and a triangle is created.
  - As another two big triangles are created.
  - Then using two x=k equations the stem of the tree is created.
  - By using their equations their areas are coloured.
  - Area of tree is coloured green and stem is coloured brown.

Out Come:



1. $y < -1.2\sqrt{0.2 + (x)^2} + 7\{2 < y < 5\}$
2. $y < -1.4\sqrt{0.2 + (x-0)^2} + 10\{8 > y > 5\}$
3. $y < -1.9\sqrt{0.2 + (x)^2} + 13\{y > 8\}$
4. $x < 0.7\{0 < y < 2\}\{x > -0.7\{0 < y < 2\}\}$
5. $y = -1.9\sqrt{0.2 + (x)^2} + 13\{y > 8\}$
6. $y = 8\{-2.593 < x < 2.593\}$
7. $y = -1.4\sqrt{0.2 + (x-0)^2} + 10\{8 > y > 5\}$
8. $y = 5\{-3.543 < x < 3.543\}$
9. $y = -1.2\sqrt{0.2 + (x)^2} + 7\{2 < y < 5\}$
10. $y = 2\{-4.143 < x < 4.143\}$
11. $x = -0.7\{0 < y < 2\}$
12. $x = 0.7\{0 < y < 2\}$
13. $y = 0\{-0.7 < x < 0.7\}$
14.

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