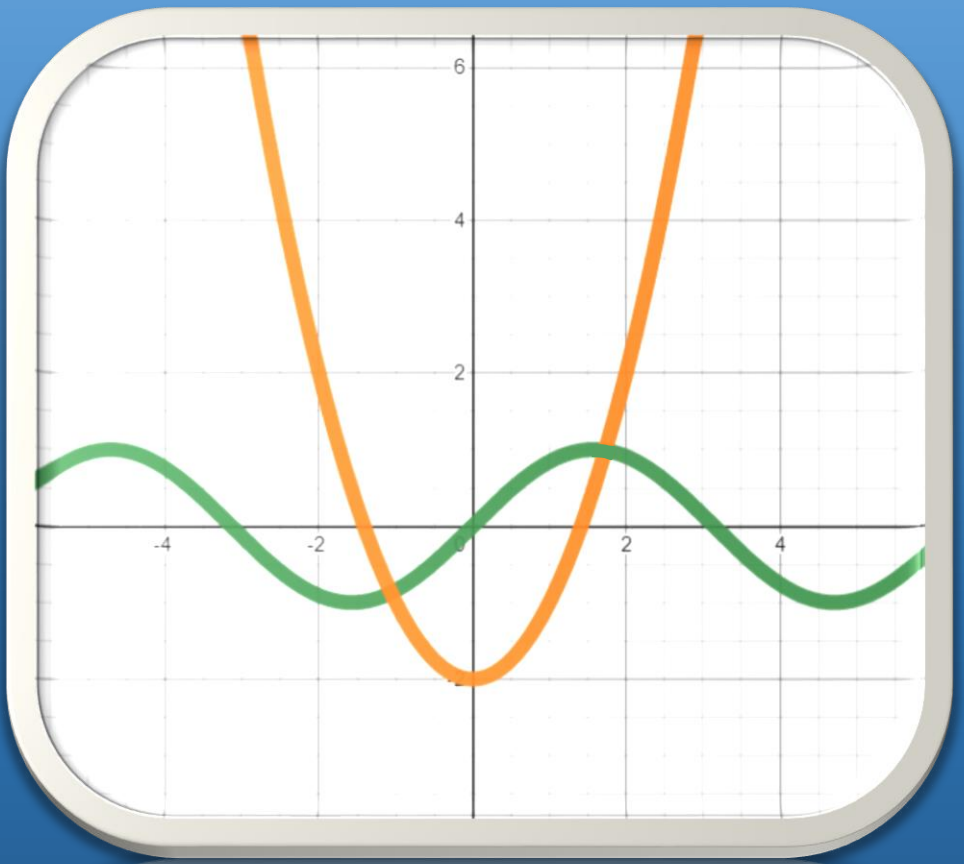
GDC - SHADNAGAR

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 Project

on

"Logo Design with Mathematical Shapes"

Sl. No	Name of the Student	Roll No
1.	P. Archana	19033067468002
2.	V. Shailaja	19033067441005
3.	M. Srikanth	19033067441005
4.	P.Samuel	20033067468004
5.	P. Akhila	20033067441005
6.	J. Neha	

Supervisor

T. Sri Krishna

Department of Mathematics

GDC - Shadnagar

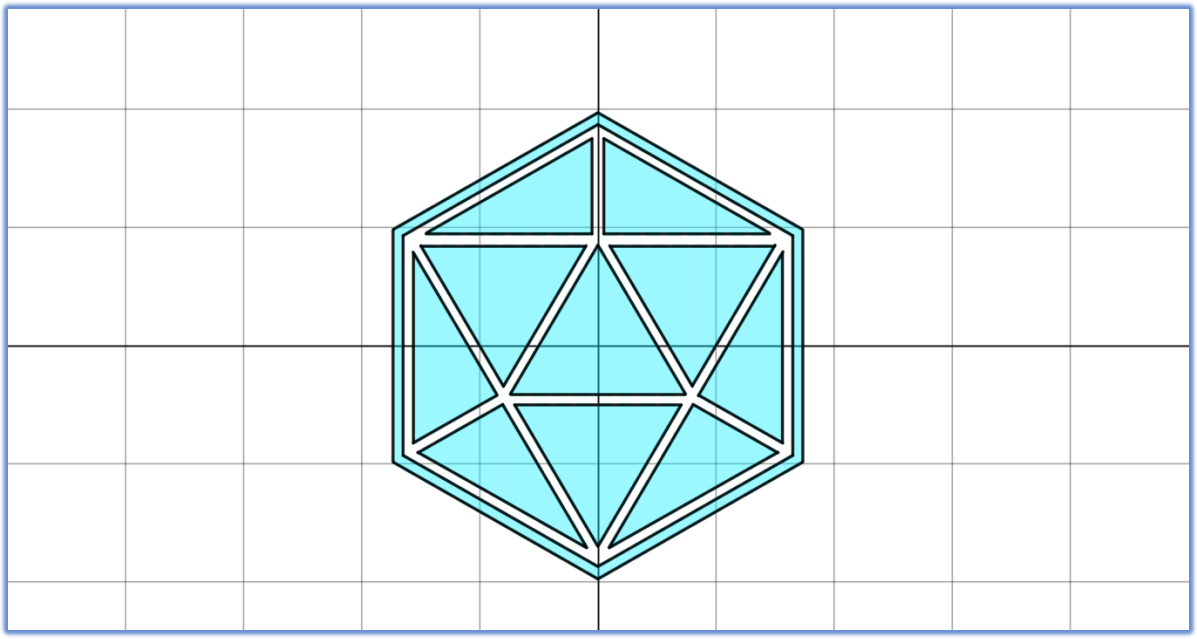
Principal

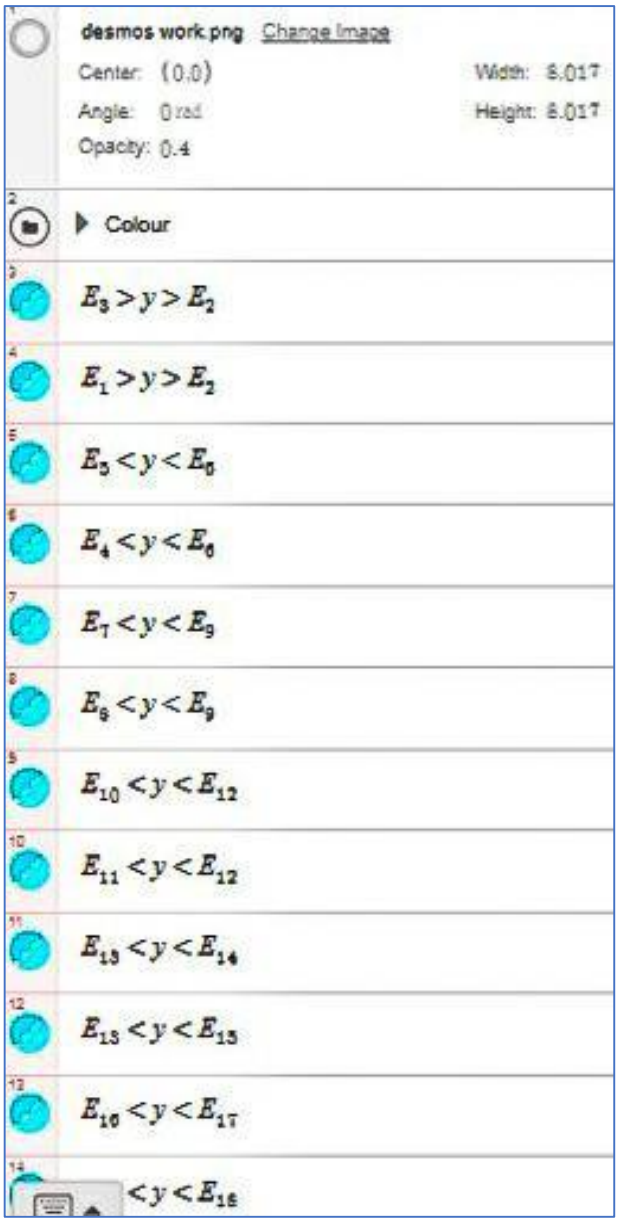
GDC - Shadnagar

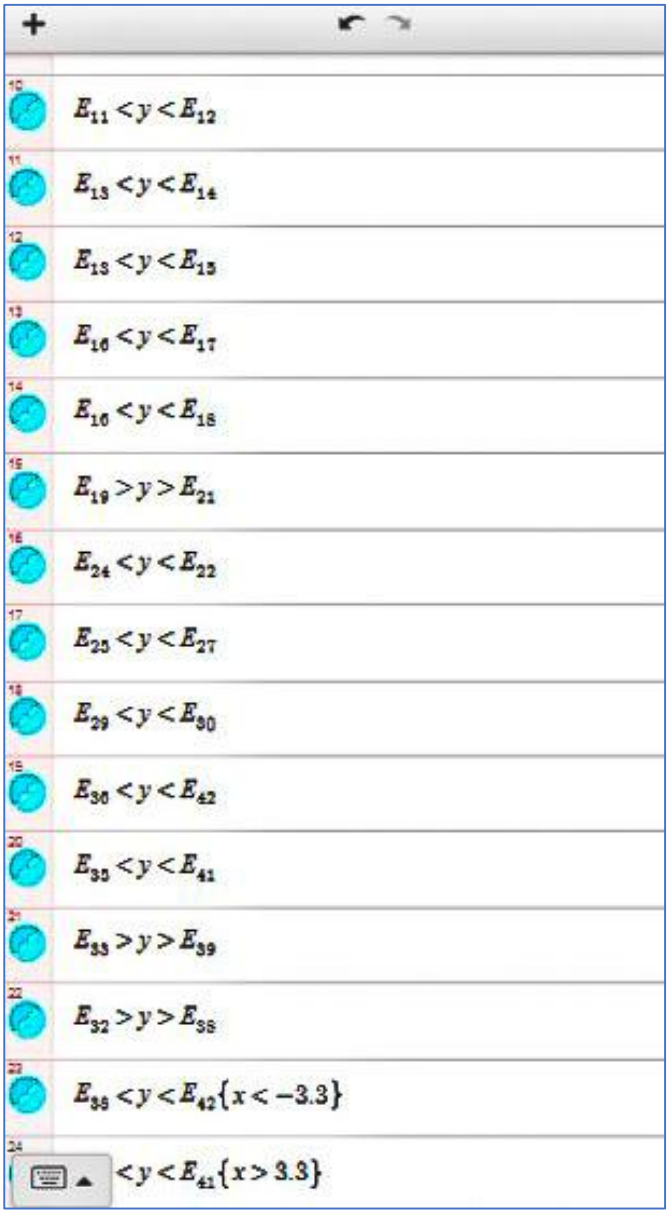
Name of the Project: **"Logo Design with Mathematical Shapes"**

- **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
$E_3 > y > E_2$
$E_1 > y > E_2$
$E_5 < y < E_6$
$E_4 < y < E_6$
$E_7 < y < E_9$
$E_8 < y < E_9$
$E_{10} < y < E_{12}$
$E_{11} < y < E_{12}$
$E_{13} < y < E_{14}$
$E_{13} < y < E_{15}$
$E_{16} < y < E_{17}$
$< y < E_{16}$


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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

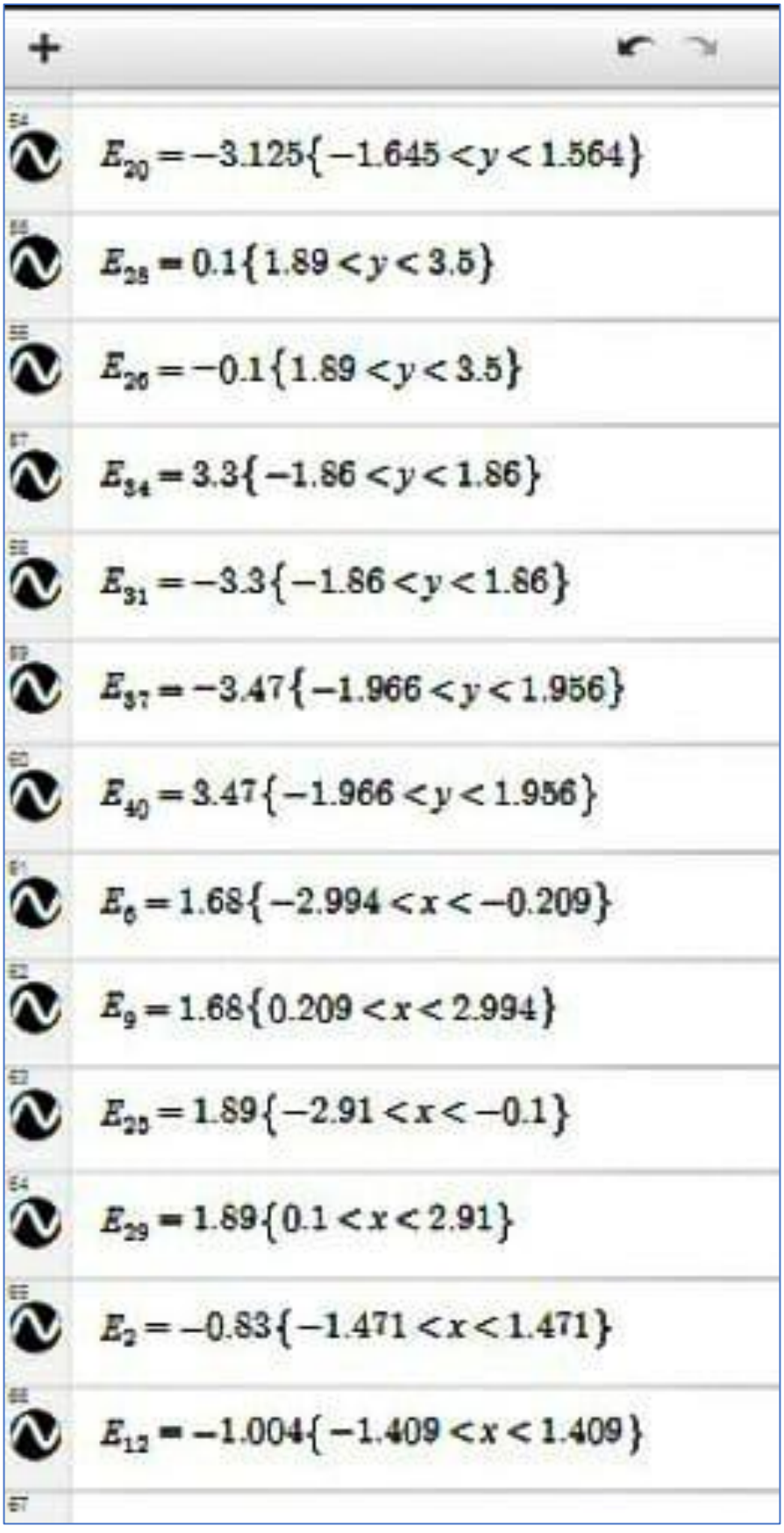
$$E_{32} = -0.57x - 3.74\{-3.3 < x < 0\}$$

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

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

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

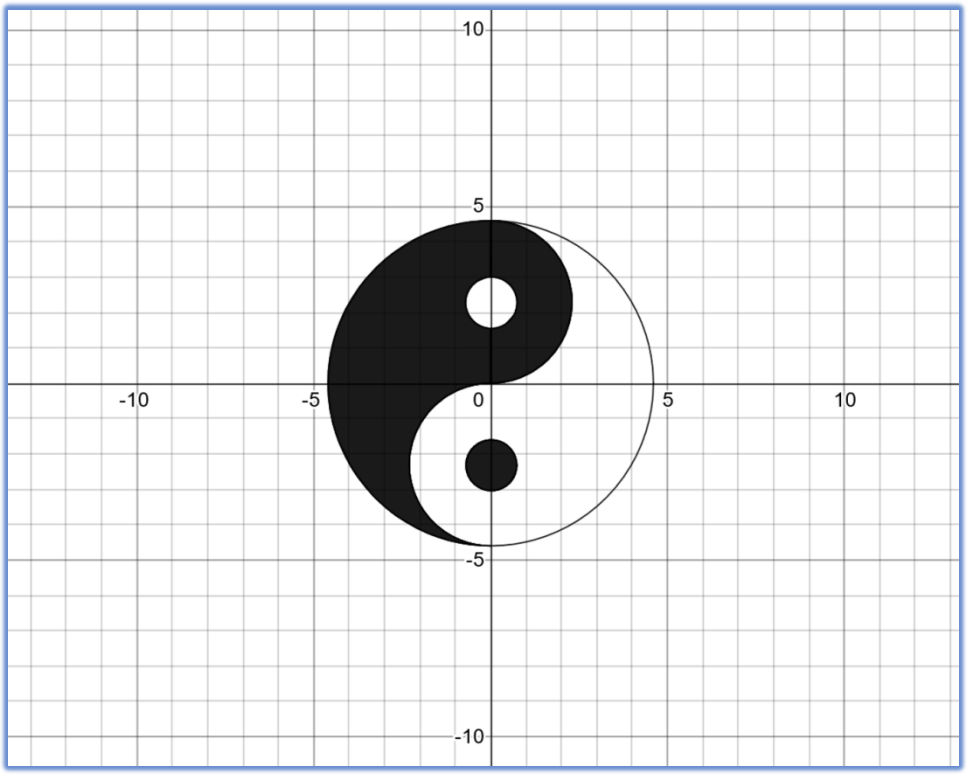
$$E_{30} = -0.57x + 3.56\{0.1 < x < 2.9\}$$


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

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

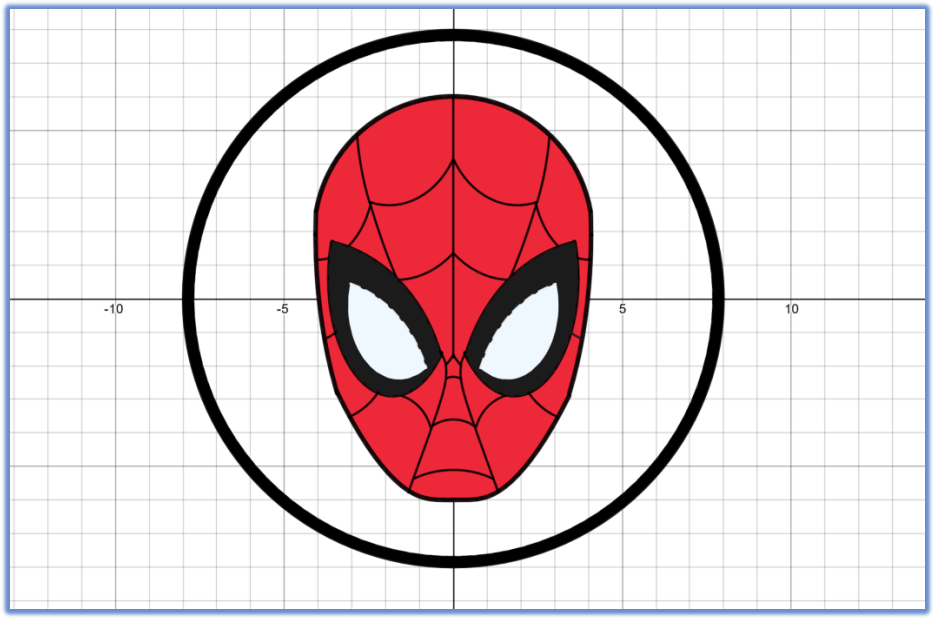
10 $(2.3)^2 = (x-0)^2 + (y+2.3)^2 \{x<0\}$

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

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

$$\frac{(x-0)^2}{4.05^2}+\frac{(y-1.9)^2}{8.7^2}<1^2+(0.0139)\left\{\frac{(x-4.4)^2}{7}+\frac{(y+3.3)^2}{10}<1.6^2\right\}\left\{\frac{(x-1.8)^2}{2.9}+\frac{(y-0.0)^2}{10}>1.1^2\right\}\left\{y>0.3\sqrt{1.8+(x-(0.02))^4}-6.4\right\}$$

$$y>0.3\sqrt{1.8+(x-(0.02))^4}-6.4\left\{\frac{(x-0)^2}{4.05^2}+\frac{(y-1.9)^2}{8.7^2}<1^2+(0.0139)\right\}\left\{\frac{(x+1.8)^2}{2.9}+\frac{(y-0.0)^2}{10}>1.1^2\right\}\left\{\frac{(x-1.8)^2}{2.9}+\frac{(y-0.0)^2}{10}>1.1^2\right\}\{y<2\}$$

$$\frac{(x-0)^2}{4.05^2}+\frac{(y-1.9)^2}{8.7^2}<1^2+(0.0139)\left\{\frac{(x+4.4)^2}{7}+\frac{(y+3.3)^2}{10}<1.6^2\right\}\left\{\frac{(x+1.8)^2}{2.9}+\frac{(y-0.0)^2}{10}>1.1^2\right\}\left\{y>0.3\sqrt{1.8+(x-(0.02))^4}-6.4\right\}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

eyes

$$\frac{(x-1.8)^2}{2.9}+\frac{(y-0.0)^2}{10}=1.1^2\{0.359<x\}\{y<1.684\}$$

$$\frac{(x+1.8)^2}{2.9}+\frac{(y-0.0)^2}{10}=1.1^2\{-0.359>x\}\{y<1.684\}$$

$$\frac{(x-1.0)^2}{4.7}+\frac{(y+.2)^2}{10}=0.7^2\{0.796<x\}\{y<0.449\}$$

$$\frac{(x+1.0)^2}{4.7}+\frac{(y+.2)^2}{10}=0.7^2\{-0.796>x\}\{y<0.449\}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

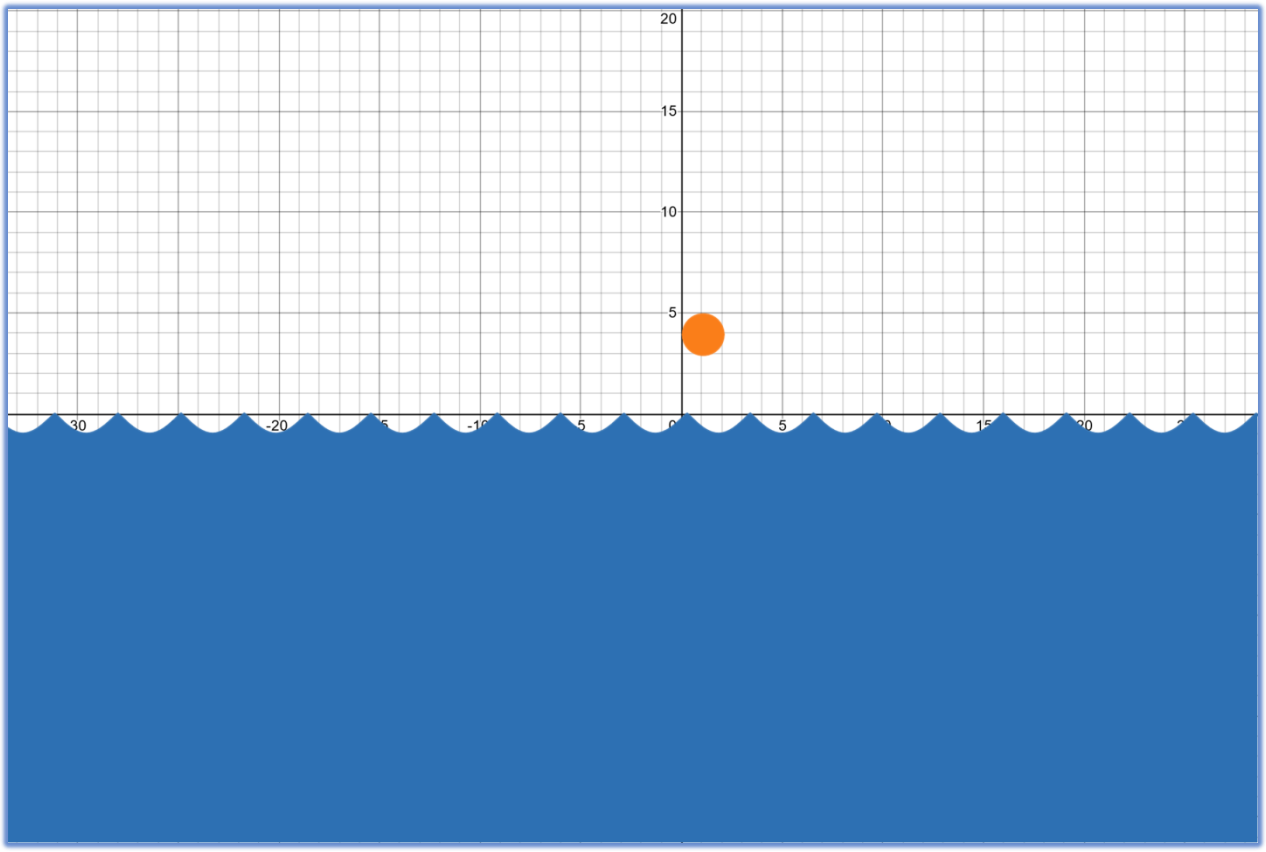
$$(x+1.4)^2+(y+0.9)^2=1.6^2\{-0.223<x<0\}\{y<-1.675\}$$

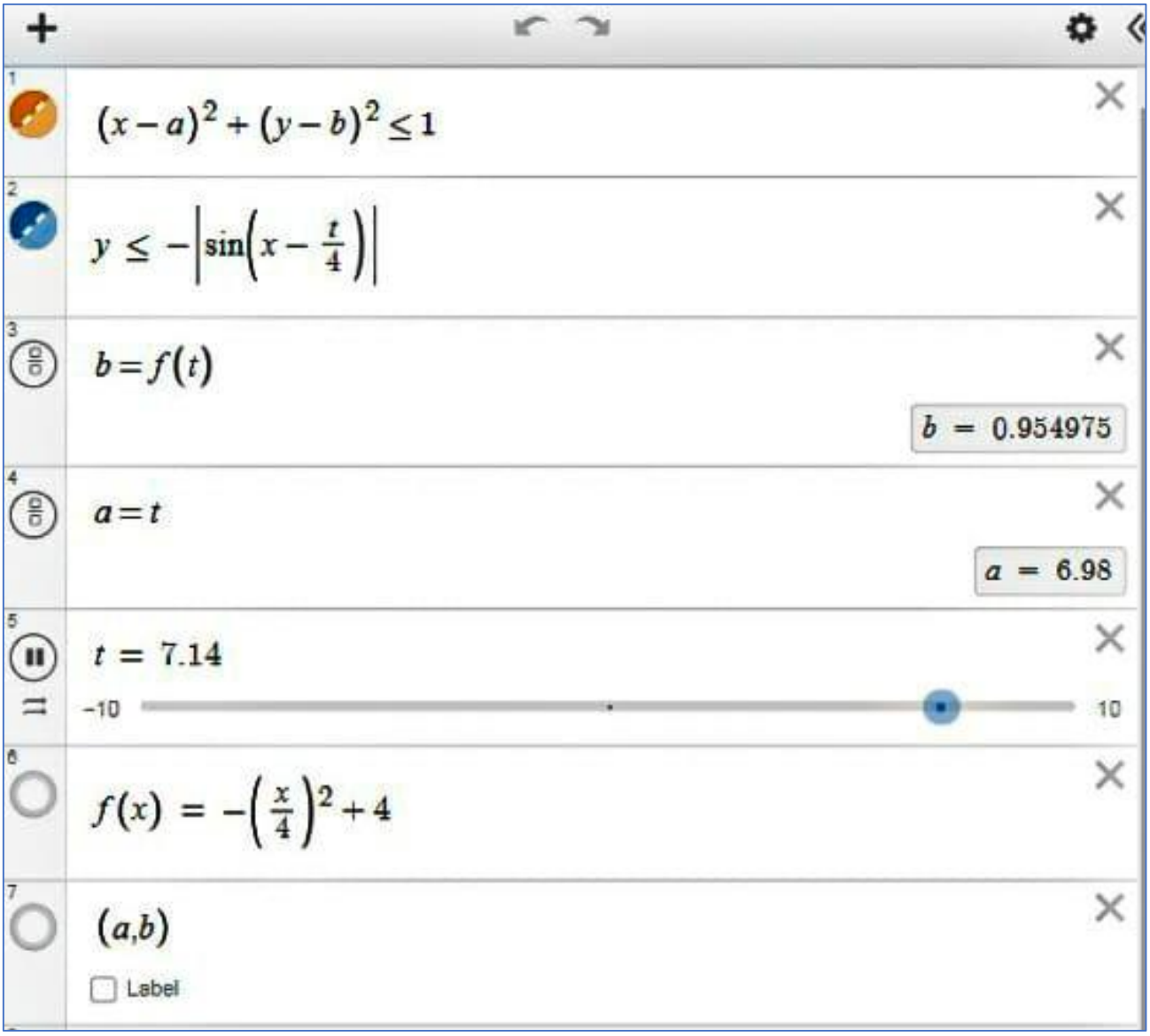
$$(x-1.4)^2+(y+0.9)^2=1.6^2\{0.223>x>0\}\{y<-1.675\}$$

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:

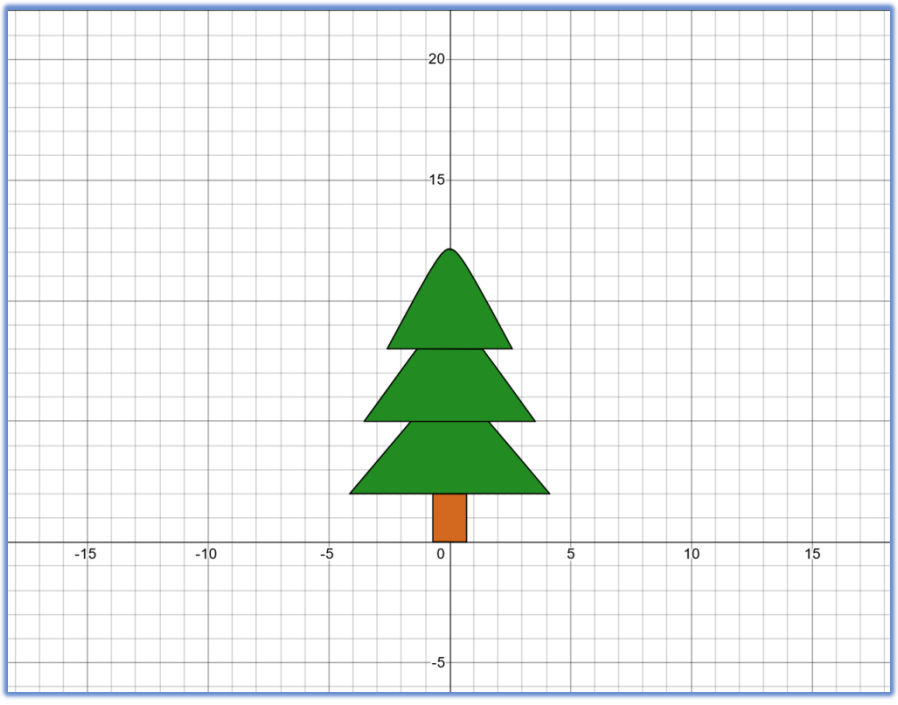


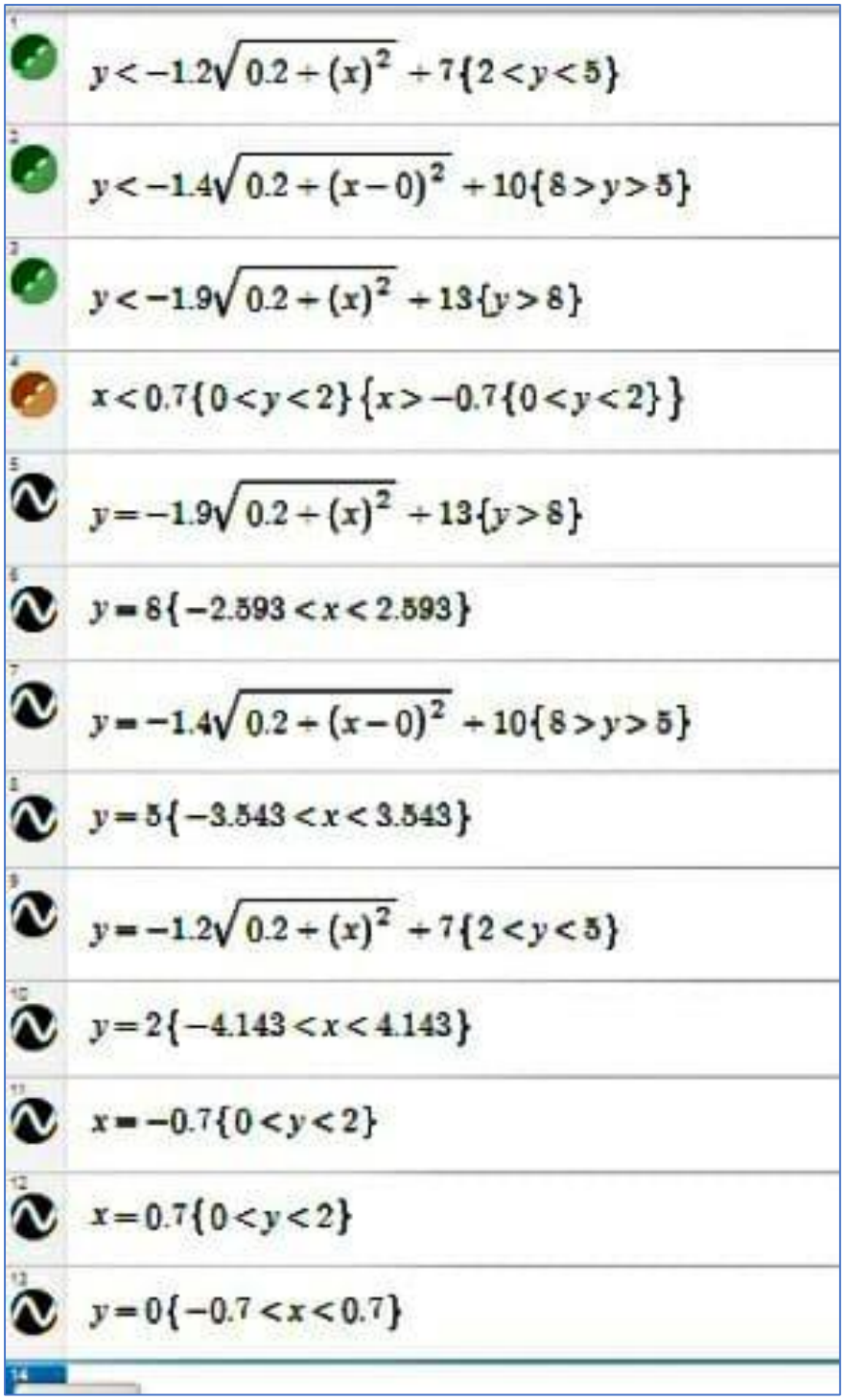

1
$(x-a)^2+(y-b)^2\le 1$
2
$y\le -\left|\sin\left(x-\frac{t}{4}\right)\right|$
3
$b=f(t)$
$b = 0.954975$
4
$a=t$
$a = 6.98$
5
$t = 7.14$
-10
10
6
$f(x)=-\left(\frac{x}{4}\right)^2+4$
7
(a,b)
Label

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