Version 2

Blue background with White oval and parametric equation inside. Background has multicolored blue diagonals leading to varying waves. Parametric equation kind of looks like a watermelon with green and yellow.

```
import turtle
import math
import random



t=turtle
r=random
t.colormode(255)

#Make Panel 800x600


#Set variable lists
#Draw colors, Wave Color, Background colors

#17
#Line can be many shades of orange, red, purple. green, yellow
DrawC=
[(0,127,95),(85,166,48),(128,185,24),(191,210,0),(47,151,193),(160,234,222),(249,214,22)]

#9
#Waves can be shades of blue
WaveC=[(2,62,138), (0,119,182), (0,150,199), (0,180,216), (72,202,228), (144,224,239),
(173,232,244), (202,240,248)]

#Background colors shades blue
BG = [(33,41,92), (27,59,111),(6,90,130),(28,114,147),(56,160,198)]

#Set Scale factor



#Set Background Color Random from list
Screen.bgcolor(random.choice(BG))
```

```
#Based on Pseudocode from Rachel Wildeson adapted from Dr. Z's Wave example


#Start making waves
#make turtle for waves
waves = t.Turtle()


#SET VALUES FOR WAVES
#set range for random height of waves
WH = r.randrange(10,30)

# set range for random width of waves
WW= r.randrange(20,50)

#set angles
WA = range(0,360)

#Set start point for diagonals
WSY = (-400) #add random here maybe?


#Pen up for Clean start
waves.penup()
waves.goto (-300,WSY)


#Forloop waves
#While the y value is less than 350 keep making waves.
while WSY<350:
        WSY = WSY + (r.randrange(40,80,5)) #random number from 40-80 in steps of 5


        #Set line thickness variation. Want ends to be tapered?
        waves.pensize(r.randrange(3,6))
        #Set speed
        waves.speed(10)

        #WS = (-400,WSY) #Wave Start
        waves.goto (-400,WSY)

        waves.pendown()
```

```
        #Set linecolor to random color from waves color list (iteration)
        waves.pencolor(WaveC[r.randrange(8)])

        #SET VALUES FOR WAVES
        #set range for random height of waves
        WH = r.randrange(20,90,5)

        # set range for random width of waves
        WW= r.randrange(30,80,5)

        #input Wave equation from DR Z example
        for angle in WA:


        RAD = math.radians(angle)  # convert from degrees (0-360) to radians (0-2*pi)
        Y = WH * math.sin(RAD) + WW # use the sine function to create a wave
        X = angle # move forward so it makes a wave, not a line
        waves.pendown()
        waves.goto(X,Y)




#Make new turtle called Draw
Draw=t.Turtle()

# Set speed 10, think, Random color
Draw.speed(10)
Draw.pensize(2)



#Set pen thickness/speed for oval
t.pensize(2)
t.speed(10)



# Code from Geek Tutorials on how to make an oval.
t.penup()
t.goto(0, 0)
```

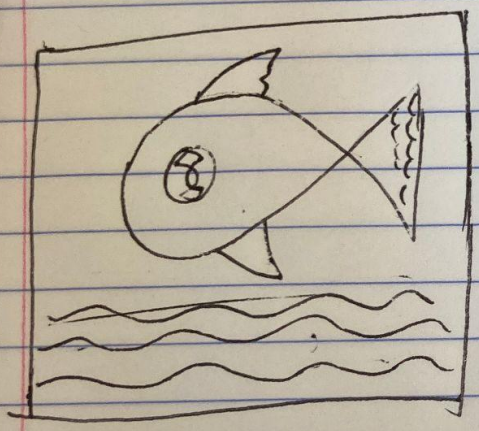
```
t.pendown()
t.shape("circle")
t.pencolor("white")
t.fillcolor("white")
t.shapesize(25, 18, 2) # (length, width, outline)


#move pen so it doesn't look out of place
Draw.penup()
Draw.goto(100,0)

#code copied from DR Z's Bean Example and edited
ANGLES = range(0,360) # change this depending on your pattern!
for angle in ANGLES:
        angle = math.radians(angle) # overwrites input to radians (required!)



#set how smooth the shapes are/how many segments
smooth = 5
scale = 75

ANGLES = range(0,(720 * smooth))

for angle in ANGLES:

  #Set linecolor to random color from waves color list (iteration)
        Draw.pencolor(DrawC[r.randrange(7)])

        angle = math.radians(angle/(2*smooth))

        x = ((math.cos(angle) - math.cos(80*angle)* math.sin(angle)))*scale
        y = (2 * math.sin(angle) - math.sin(80 * angle)) * scale



        Draw.goto (x,y)
        Draw.pendown()

#end turtle
t.done()
```

Version 1.

Goal. Make waves in background.
Make random color fish with an eye made of the Bean Code

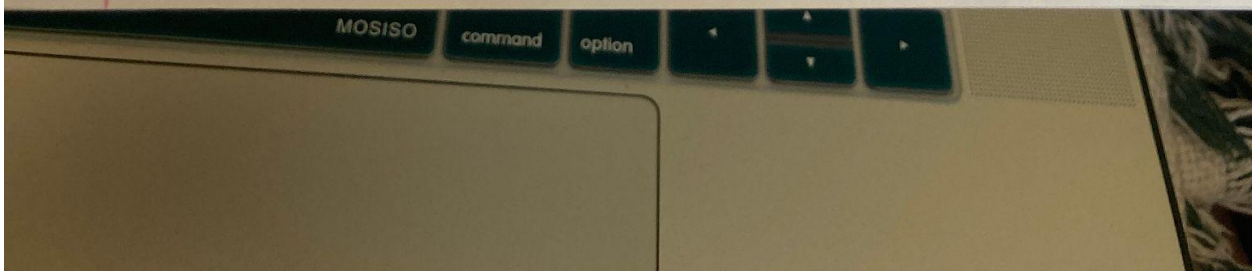
```
import turtle
import math
IMPORT RANDOM


# Set turtle to t t=turtle
# set color mode  t.colormode(255)

#Make Panel 800x600


#Set variable lists
#Fish Color, Eye Color, Wave Color, Background colors

#Fish can be many shades of orange, red, purple. green, yellow
(88,53,94),(189,147,189),(125,223,100),(157,2,8),(208,0,40),(220,47,2),(232,93,4),(244,140,6),(
250,163,7),(255,186,8)

#Eyes can be yellow, blue, green
(0,127,95),(85,166,48),(128,185,24),(191,210,0),(47,151,193),(160,234,222),(249,214,22)


#Waves can be shades of blue
(2,62,138), (0,119,182), (0,150,199), (0,180,216), (72,202,228), (144,224,239), (173,232,244),
(202,240,248)

#Background colors shades blue (33,41,92), (27,59,111),(6,90,130),(28,114,147),(56,160,198)

#Set Scale factor


#Set Background Color Random from list

#Start making waves
#make turtle for waves
#Set range for Y value of start point for waves.
WS = 0
WS = WS + (range(20,40))

# set range for randomint
```

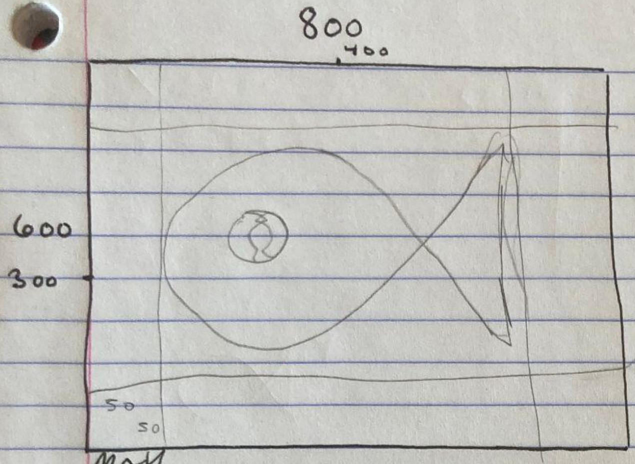
```
#set range for random height of waves
# set range for random width of waves

#Forloop waves

    #wavepoint = (-400,yValue + randomint)

    #Set linecolor to random color from waves color list (iteration)

    #Set line thickness variation. Want ends to be tapered

    #input Wave equation

    #go to (x,y)



#Make new turtle called Fish
# Set speed, 10 medium thick, black
#Set fill color to random from fish color
#set range for random variables for fish
#Begin Fill random fish color
#Draw fish with equation
#end fill


#set center point for eye
#set linecolor to random eye color
# make else setup so yellow fish doesnt have yellow eyes
#Set range for eyes size
#draw eye
```



Pieces needed
~~Fish curve~~
Bean eye
waves
gradient of colors
~~scale~~ pattern?

Randomness
size of fish
size of eye
scale pattern?
Fish color
eye color





MATH

Fish curve equation
eye equation
waves equation

VARIABLES

Fish size
Fish color
eye size
eye color
waves size
wave color

Background color
Turtle. eye
turtle. fish

Steps

import turtle, math
make panel size
~~make panel color Back Blue~~
set list Bg colors
set list Fish colors
set list eye colors
set list wave colors
set scale
Random Bg color from list
vary wave line thickness
Random wave color from list
Fill Bg with waves

Begin fill random fish color
Draw fish random size
end Fill

set line color Random eye list
random size (in relation to Fish)
Draw eye