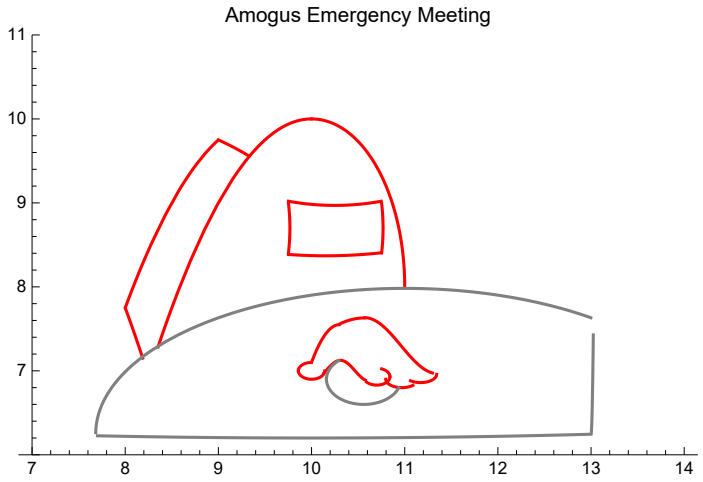
Mathematica Conic Art

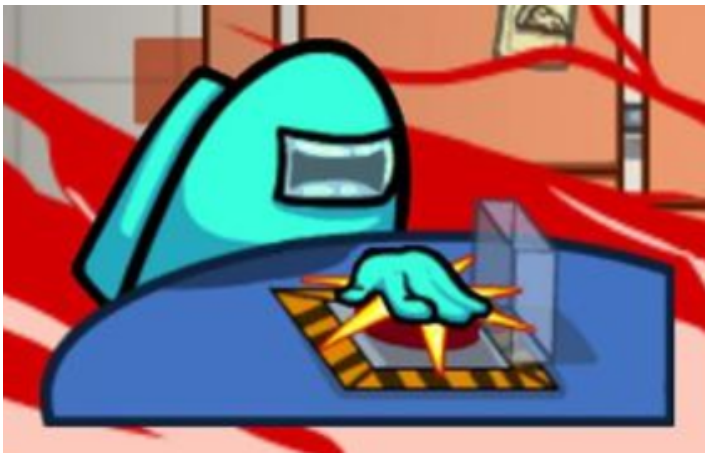
Full Drawing

I designed the Among Us emergency meeting image, involving an Among Us character pressing the emergency button on the table. Below is an image of the final graph alongside the image I designed it after (a screenshot from Among Us).

Out[36]=



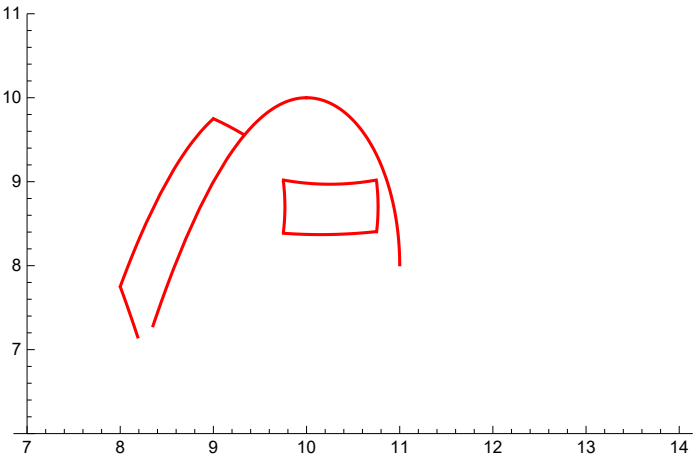
Out[37]=



Character Body

Below is an image of the character body. This includes the shape of the body, the eyes, and the rocket or backpack (?) on the character's back.

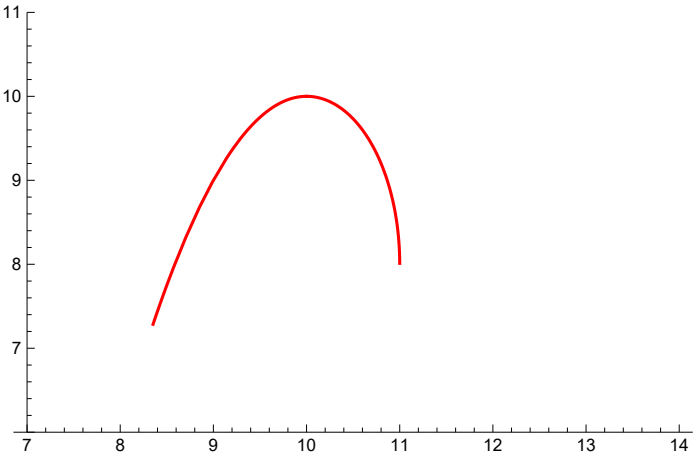
Out[38]=



Character Body Shape

The left side of the body is made of an upside down parabola (a[x]), while the right side is the upper portion of an ellipse (b[x]). I chose different equations for each side because the right side curved down much more than the left side.

Out[39]=



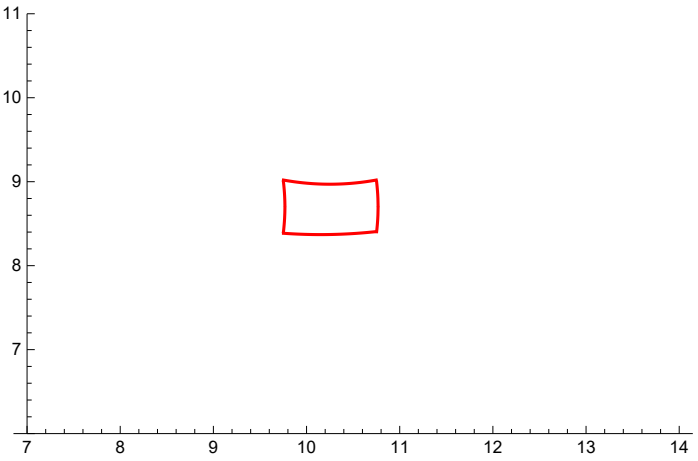
In[40]:=
```
a[x_] := Piecewise[{{-(x - 10)^2 + 10, 8.35 < x < 10}}]
```

In[41]:=
```
b[x_] := Piecewise[{{Sqrt[4 - 4 (x - 10)^2] + 8, x > 10}}]
```

Character Eyes

The upper and lower outlines of the eyes are made of parabolas (c[x] and d[x]) while the sides are made of hyperbolas (e[x] and f[x]).

Out[42]=



In[43]:=
```
c[x_] := Piecewise[{{0.2 (x - 10.25)^2 + 8.97, 9.75 < x < 10.75}}]
```

In[44]:=
```
d[x_] := Piecewise[{{0.1 (x - 10.15)^2 + 8.37, 9.75 < x < 10.75}}]
```

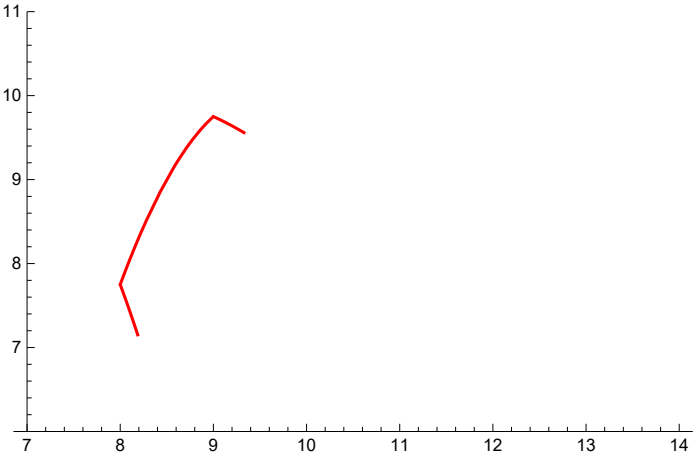
In[45]:=
```
e[x_] := Piecewise[{{Sqrt[4/3 * 4.3 (x - 10.25)^2 - 4/3] + 8.7, 9.75 < x < 10},
  {Sqrt[4/3 * 4.3 (x - 11.25)^2 - 4/3] + 8.7, 10.75 < x < 11.25}}]
```

In[46]:=
```
f[x_] := Piecewise[{{-Sqrt[4/3 * 4.3 (x - 10.25)^2 - 4/3] + 8.7, 9.75 < x < 10},
  {-Sqrt[4/3 * 4.3 (x - 11.25)^2 - 4/3] + 8.7, 10.75 < x < 11.25}}]
```

Rocket/Backpack

All parts of the rocket/backpack are made of parabolas, including the top (h[x]), the bottom (i[x]), and the side parallel to the back (g[x]).

Out[72]=



In[47]:=
```
g[x_] := Piecewise[{{-(x - 9.5)^2 + 10, 8 < x < 9}}]
```

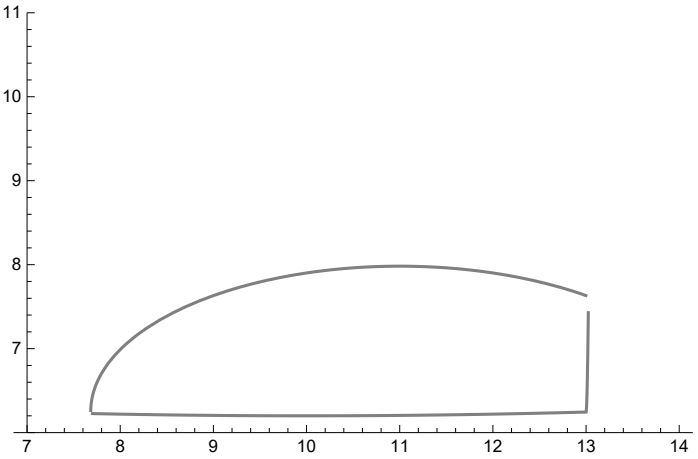
In[48]:=
```
h[x_] := Piecewise[{{-0.25 (x - 8)^2 + 10, 9 < x < 9.33}}]
```

In[49]:=
```
i[x_] := Piecewise[{{-(x - 6.5)^2 + 10, 8 < x < 8.19}}]
```

Table

Below is a depiction of the table. It consists of an ellipse (j[x]) for the rounded segment and two parabolas (k[x] and l[x]) that appear close to a straight line.

Out[73]=



In[50]:=
```
j[x_] := Piecewise[{{Sqrt[3 - 3/11 (x - 11)^2] + 6.25, x < 13}}]
```

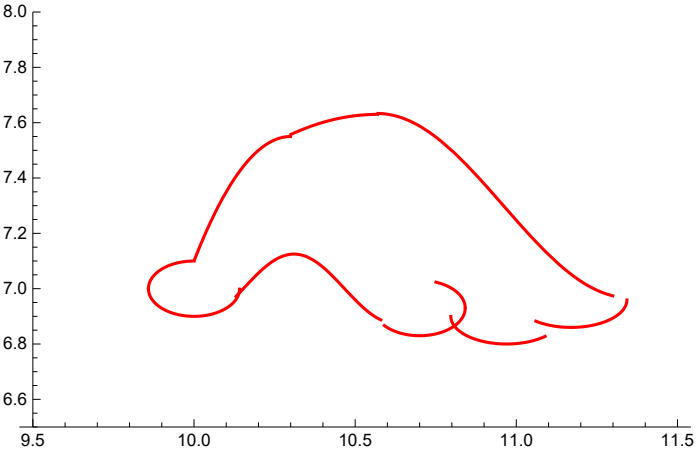
In[51]:=
```
k[x_] := Piecewise[{{0.005 (x - 10)^2 + 6.2, 7.7 < x < 13}}]
```

In[52]:=
```
l[x_] := Piecewise[{{2000 (x - 13)^2 + 6.25, 13 < x < 13.0265}}]
```

Hand

Below is a zoomed in section of the hand, including the back of the hand and each of the fingers.

Out[74]=

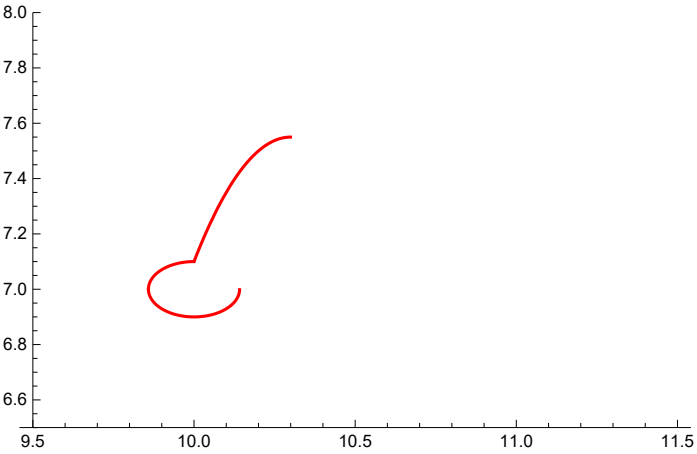


Thumb

This portion of the hand consists of an ellipse (p[x] and q[x]) for the end of the thumb and a parabola (o[x]) for the finger.

In[77]:=
```
Plot[{o[x], p[x], q[x]}, {x, 9.5, 11.5}, PlotRange → {6.5, 8}, PlotStyle → Red]
```

Out[77]=



In[56]:=
```
o[x_] := Piecewise[{{-5 (x - 10.3)^2 + 7.55, 10 < x < 10.3}}]
```

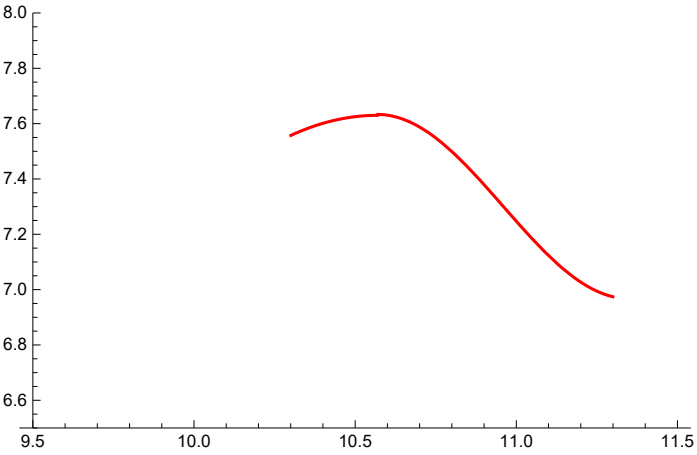
In[57]:=
```
p[x_] := Piecewise[{{-Sqrt[0.01 - 0.5 (x - 10)^2] + 7, 6 < x < 11}}]
```

In[58]:=
```
q[x_] := Piecewise[{{Sqrt[0.01 - 0.5 (x - 10)^2] + 7, x < 10}}]
```

Back of the Hand and 4th Finger

The back of the hand is a segment of a parabola (n[x]) and the 4th finger is a sin function (m[x]).

Out[78]=



In[79]:=
```
m[x_] := Piecewise[{{1/3 Sin[4 x - 3] + 7.3, 10.57 < x < 11.3}}]
```

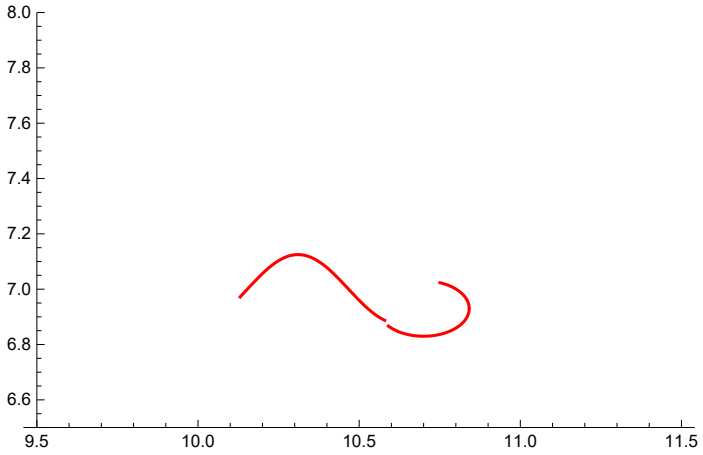
In[80]:=
```
n[x_] := Piecewise[{{-(x - 10.57)^2 + 7.63, 10.3 < x < 10.57}}]
```

Second Finger

The connector between the thumb and second finger is a sin function (r[x]) while the 2nd fingertip is an

ellipse (s[x] and t[x]).

Out[82]=



In[59]:=
```
r[x_] := Piecewise[{{0.125 Sin[10 x - 1] + 7, 10.13 < x < 10.58}}]
```

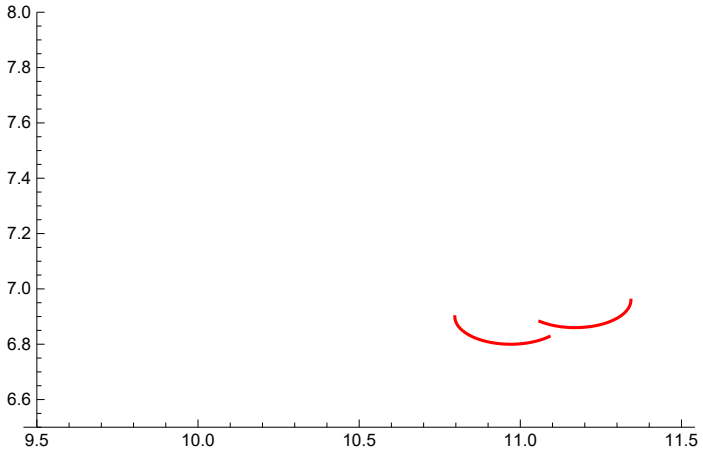
In[60]:=
```
s[x_] := Piecewise[{{-Sqrt[0.01 - 0.5 (x - 10.7)^2] + 6.93, x > 10.59}}]
```

In[61]:=
```
t[x_] := Piecewise[{{Sqrt[0.01 - 0.5 (x - 10.7)^2] + 6.93, x > 10.75}}]
```

3rd and 4th Fingertips

The 3rd and 4th fingertips are each made out of ellipses (u[x] and v[x]).

Out[83]=



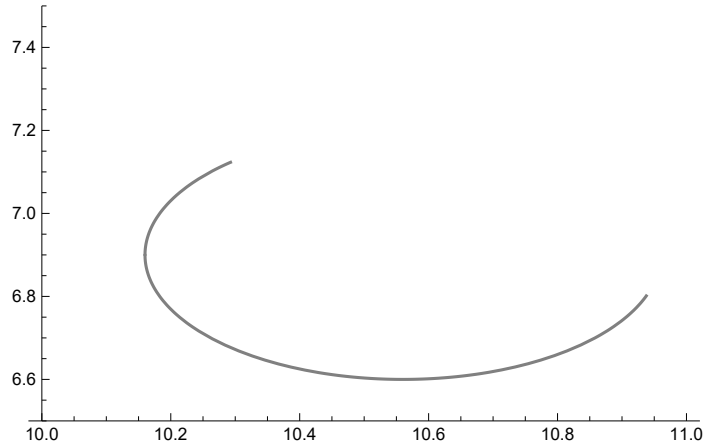
In[62]:=
```
u[x_] := Piecewise[{{-Sqrt[0.01 - 1/3 (x - 10.97)^2] + 6.9, x < 11.09}}]
```

In[63]:=
```
v[x_] := Piecewise[{{-Sqrt[0.01 - 1/3 (x - 11.17)^2] + 6.96, 11.06 < x < 11.5}}]
```

Button

A zoomed in image of the button, under the hand in the original drawing, is shown below. It consists of an ellipse (w[x] and y[x]).

Out[ ]=



In[65]:=
$$w[x\_] := \text{Piecewise}\left[\left\{\left\{\sqrt{0.09 * \left(1 - \frac{(x - 10.56)^2}{0.16}\right)} + 6.9,\ x < 10.293\right\}\right\}\right]$$

In[66]:=
$$y[x\_] := \text{Piecewise}\left[\left\{\left\{-\sqrt{0.09 * \left(1 - \frac{(x - 10.56)^2}{0.16}\right)} + 6.9,\ 10.1 < x < 10.938\right\}\right\}\right]$$