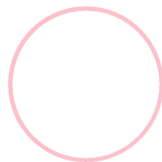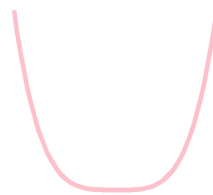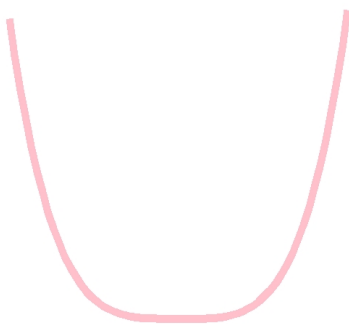# Happy Valentines Day

David M Vermillion

2/14/2021
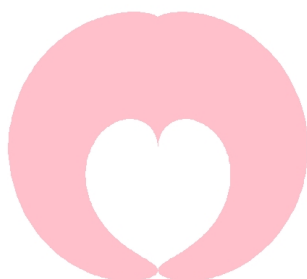
Happy Valentines Day my beloved Shayla!

As you know, I enjoy dabbling in all things visualization and math. I figured a delightful gift for you would be to create a little card telling how much I love you, utilizing some mathiness. I used one of my graphing programs (ggplot2) to generate the message shown below in two ways.
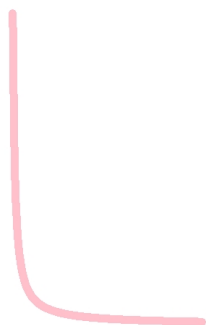
I also wanted to show you another heart I created to express my love.

These are the equations I used to make the letters and the hearts, with the exception of the I and O, which I created using graph code.
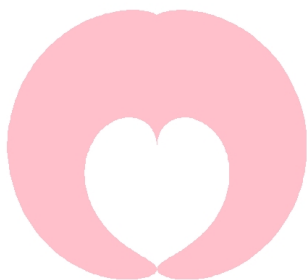
$y = \frac{1}{x}$

$y = |x|$

$x = -3|sin(y)|$

$x = 4(3sin(\theta) - sin(3\theta))$
$y = 13cos(\theta) - 5cos(2\theta) - cos(4\theta)$

$r(\theta) = 2 - 2sin\theta + sin\theta\frac{\sqrt{|cos\theta|}}{sin\theta + 1.4}$

With love from your adoring husband,

David