

Your Nerdy Valentine's Day Card

David M Vermillion

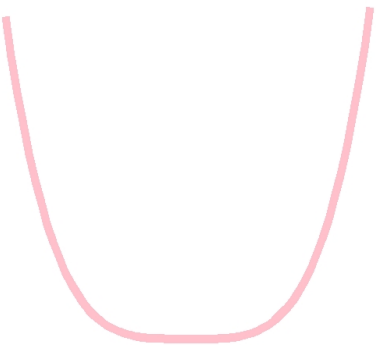
2/14/2021

Happy Valentines Day my beloved Shayla!

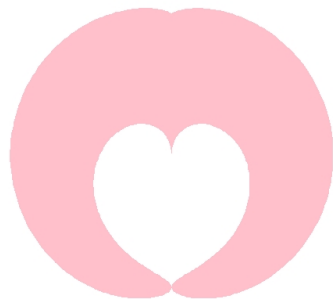
As you know, I enjoy dabbling in all things visualization and math. I figured a delightful gift for you would be to create a little card telling how much I love you, utilizing some mathiness. I used one of my graphing programs (ggplot2) to generate the message shown below in two ways.



I
LOVES

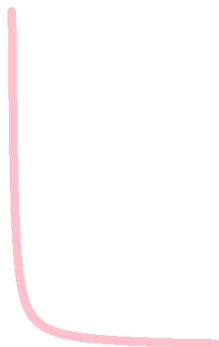


I also wanted to show you another heart I created to express my love.



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.

$$y = \frac{1}{x}$$



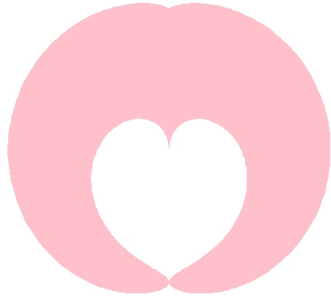
$$y = |x|$$



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



$$\begin{aligned} x &= 4(3\sin(\theta) - \sin(3\theta)) \\ y &= 13\cos(\theta) - 5\cos(2\theta) - \cos(4\theta) \end{aligned}$$



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



With love from your adoring husband,

David