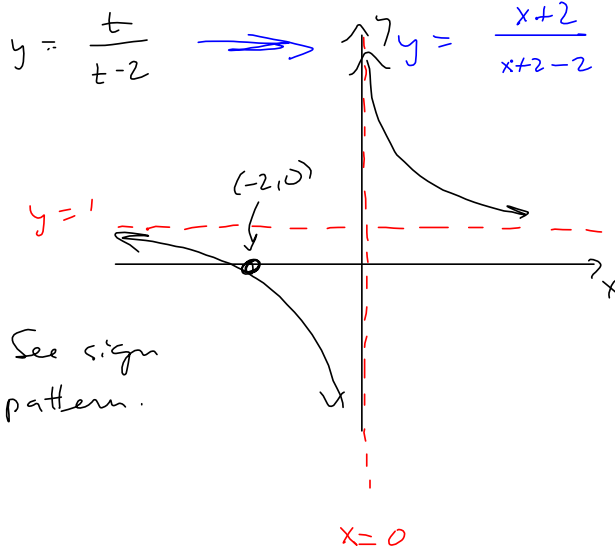


$x = t - 2 \implies t = x + 2$

$y = \frac{t}{t-2} \implies y = \frac{x+2}{x+2-2} = \frac{x+2}{x}$

Graph in rectangular coords



See sign pattern.

$D = \mathbb{R} \setminus \{0\}$

V.A. $\therefore x = 0$

$\frac{x+2}{x} = \frac{x(1 + \frac{2}{x})}{x(1)}$

$= \frac{1 + \frac{2}{x}}{1} \xrightarrow{x \rightarrow \infty} 1$

$x = -2 \implies \frac{x+2}{x} = 0$

$\implies x+2 = 0$

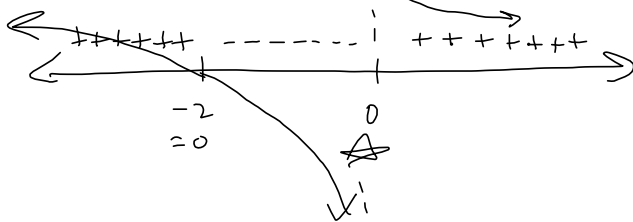
$\implies x = -2$

$\frac{x+2}{x} \longmapsto \frac{x}{x} = 1$

H.A. $\therefore y = 1$

Do a sign pattern for

$\frac{x+2}{x}$ $x = -2$ $x = 0$ matter



$$x = t - 2$$

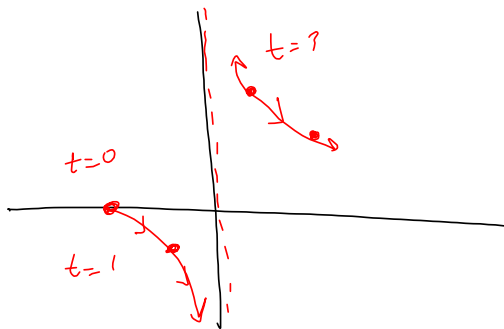
$$y = \frac{t}{t-2}$$

$$\frac{1}{1-2} = -1$$

t	x	y
0	-2	0
1	-1	-1
2	0	∞
3	1	3
4	2	2

$$x = 2 - 2 = 0, \quad y = \frac{2}{2-2} \quad \text{Z}$$

$$\frac{3}{3-2} = 3$$



$$x = 4\cos\theta$$

$$y = 2\sin\theta$$

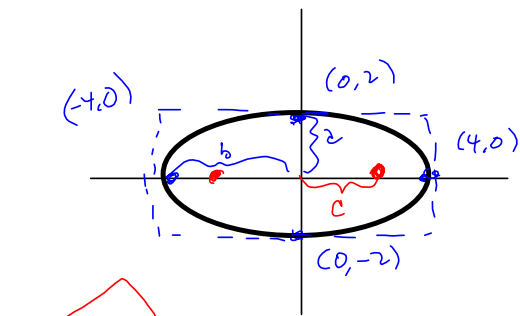
Here's the big trick for trig:

$$\sin^2\theta + \cos^2\theta = 1$$

$$\frac{x}{4} = \cos\theta \implies \left(\frac{x}{4}\right)^2 + \left(\frac{y}{2}\right)^2 = 1 \quad !$$

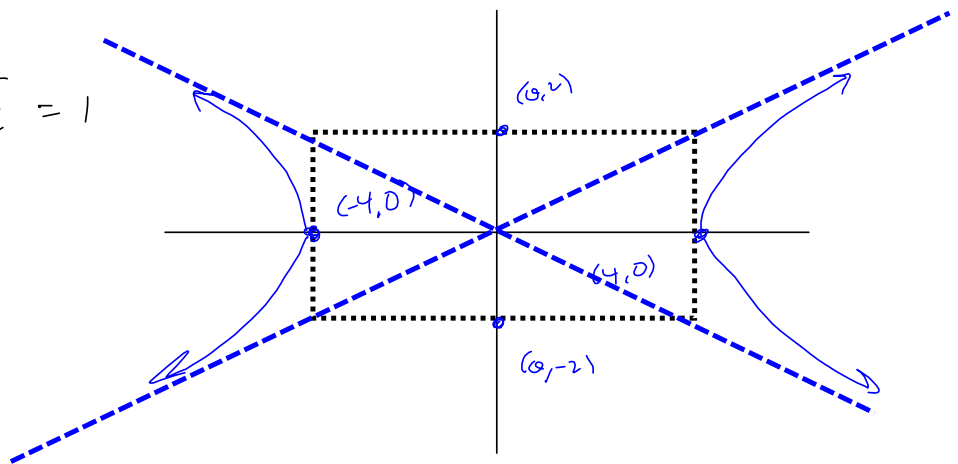
$$\frac{y}{2} = \sin\theta \implies \frac{x^2}{4^2} + \frac{y^2}{2^2} = 1 \quad !$$

Ellipse!



$$b^2 - a^2 = c^2 = \text{focal length.}$$

$$\frac{x^2}{4^2} - \frac{y^2}{2^2} = 1$$



$$x = \cos \theta$$

$$y = 3 \sin 2\theta$$

$$x = \cos \theta$$

$$\frac{y}{3} = \sin(2\theta)$$

$$= 2 \sin \theta \cos \theta$$

$$= 2 \sin \theta \cdot x$$

$$\Rightarrow y = 6x \sin \theta$$

$$y^2 = 36x^2 \sin^2 \theta = 36x^2 (1 - \cos^2 \theta)$$

$$y = \pm \sqrt{36x^2 (1-x^2)}$$

$$= \pm 6|x| \sqrt{1-x^2}$$

$$y^2 = 36x^2(1-x^2)$$

$$x^2 + y^2 = 1$$

$$y^2 = 1 - x^2$$

$$y = \pm \sqrt{1-x^2}$$

$$x = 3 \cos(2\theta)$$

$$y = \sin \theta$$

$$\cos(2\theta) = \cos^2(\theta) - \sin^2(\theta)$$

$$= 1 - \sin^2(\theta) - \sin^2(\theta)$$

$$y = 1 - 2\sin^2(\theta)$$

$$x = 3 \cos(2\theta) = 3(1 - 2\sin^2\theta)$$

$$x = 3 - 6y^2$$

If I ask find y as a function of x ,
then

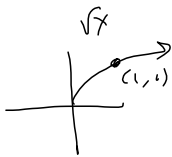
$$3 - 6y^2 = x$$

$$6y^2 = 3 - x$$

$$y^2 = \frac{3-x}{6}$$

$$y = \pm \sqrt{\frac{3-x}{6}} = \pm \frac{1}{\sqrt{6}} \sqrt{3-x}$$

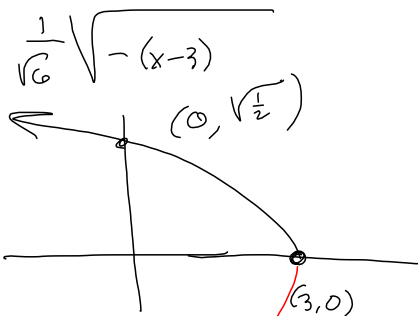
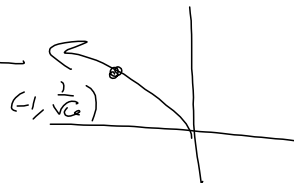
$$= \pm \frac{1}{\sqrt{6}} \sqrt{-(x-3)}$$



$$\frac{1}{\sqrt{6}} \sqrt{x}$$



$$\frac{1}{\sqrt{6}} \sqrt{-x}$$



$$x = 4 - 2t$$

$$y = 2 + 4t$$

$$y = m(x - x_1) + y_1$$

$$\frac{x - 4}{-2} = \frac{-2t}{-2}$$

$$t = \frac{x - 4}{-2}$$

$$y = 2 + 4\left(\frac{x - 4}{-2}\right)$$

$$y = \cancel{2} - 2(x - 4)$$

$$y = -2(x - 4) + 2$$

$$x = 4$$

$$y = -2x + 8 + 2 = -2x + 10 = y$$

Nice
style