Test 4 Questions?

Most of you haven't taken the test yet.

I'm (not) deeply disappointed.

I'm giving a mini-lecture to folks who are ready for 6.6, with Test 4 done.

Most of you need to focus on and complete Test 4.

6.6 #6

Didn't change sign on top. $\rightarrow \frac{3-x}{2}$

Consider the following.

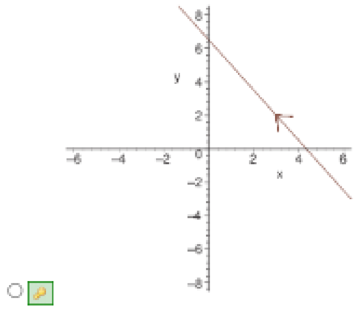
$x = 3 - 2t \Rightarrow x - 3 = -2t \Rightarrow t = \frac{x-3}{-2} = \frac{-3+x}{2}$

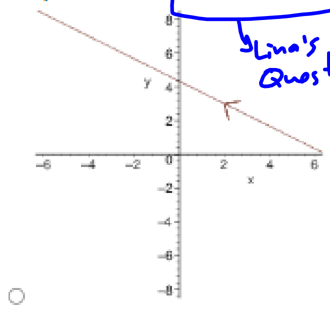
$y = 2 + 3t \Rightarrow y = 2 + 3\left(\frac{-3+x}{2}\right) = 2 - \frac{9}{2} + \frac{3x}{2} = \boxed{\frac{3}{2}x - \frac{5}{2} = y}$

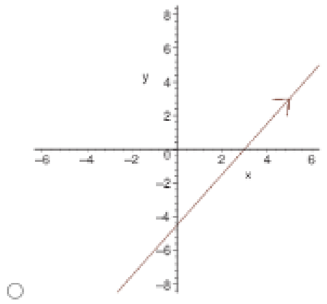
Lina's Question

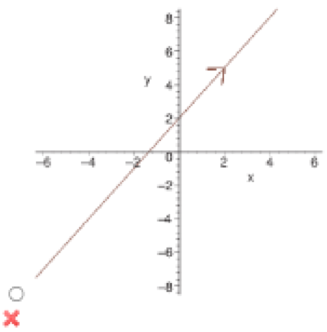
t	x	y
0	3	2
1	1	5

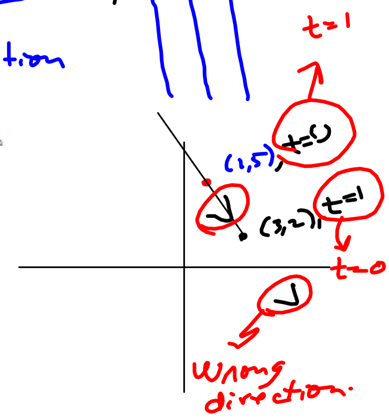
(a) Sketch the curve represented by the parametric equations (indicate the orientation of the curve).







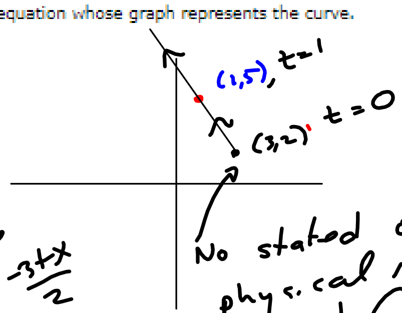




(b) Eliminate the parameter and write the resulting rectangular equation whose graph represents the curve.

$y = \frac{13}{2} - \frac{3x}{2}$

Adjust the domain of the rectangular equation, if necessary.

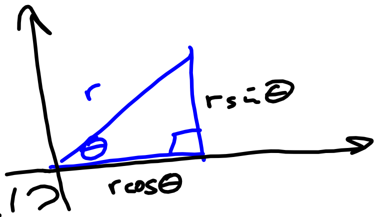


Still haven't fixed this. Found mistake $\frac{3-x}{2}$, not $\frac{-3+x}{2}$ at the top.

No stated on physical reason to start @ t=0, although quite common.

Tricks for 6.6

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



$$
\begin{cases} x = 3\cos\theta + 1 \\ y = 2\sin\theta + 11 \end{cases}
$$

An ellipse!?

$x - 1 = 3\cos\theta$

$\frac{x-1}{3} = \cos\theta$

$y - 11 = 2\sin\theta$

$\frac{y-11}{2} = \sin\theta$

$$\left(\frac{x-1}{3}\right)^2 + \left(\frac{y-11}{2}\right)^2 = 1$$

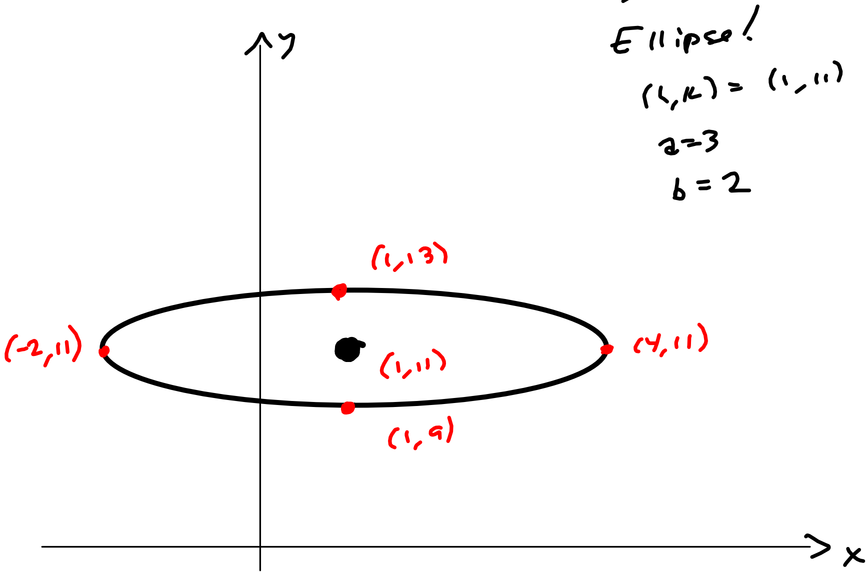
$$\frac{(x-1)^2}{3^2} + \frac{(y-11)^2}{2^2} = 1$$

Ellipse!

$(h,k) = (1,11)$

$a = 3$

$b = 2$



#7

$x = \sqrt{t} - 2 \implies x + 2 = \sqrt{t}$

$y = t^3 \qquad (x+2)^2 = t$

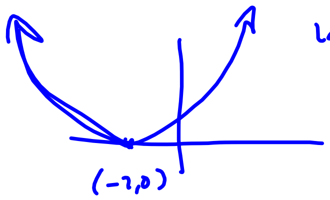
$y = \left((x+2)^2\right)^3$

$= (x+2)^{(2)(3)} = (x+2)^6$

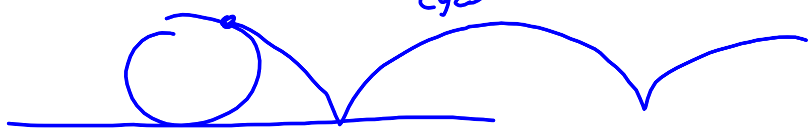
Looks like $(x+2)^2$

$(x+2)^4$

$(x+2)^8$



Cycloid



8. 0/3 points

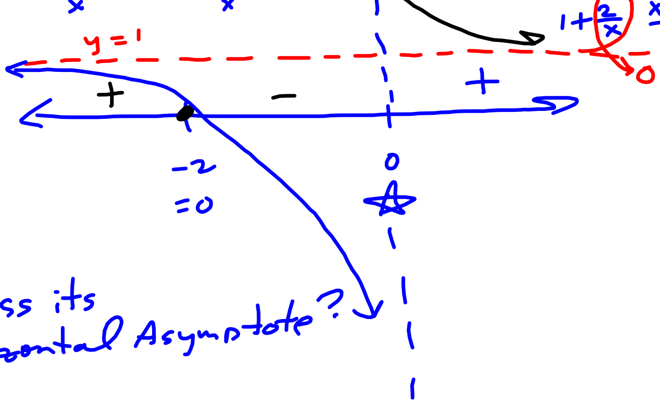
Consider the following.

$x = t - 2$

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

H.A. $\frac{x+2}{x} = \frac{x\left(1+\frac{2}{x}\right)}{x} = 1 + \frac{2}{x} \xrightarrow{x \to \text{Big}} 1$

$1 + \frac{2}{x} \xrightarrow{x \to \infty} 1$, $\frac{2}{x} \to 0$



Does it cross its H.A. = Horizontal Asymptote?

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

$\frac{x+2}{x} - \frac{1}{1}\cdot\frac{x}{x} = \frac{x+2-x}{1} = \frac{2}{1} = 0$?!

$2 = 0$?!

un-possible

Doesn't cross its H.A.

$y = e^{3t} = (e^3)^t = (e^t)^3 = x^3$

if $x = e^t$ is given.

$y = x^3$, with some restrictions,

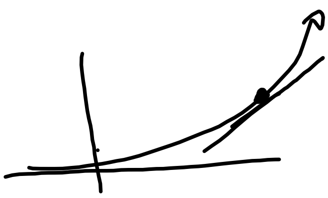
since $x = e^t > 0 \quad \forall t$

For all /each /every

"e" = the "natural" exponential function

It's the <u>unique</u> base such that its height is equal to its slope.

b^x is proportional to its slope



If you know how tall it is, you know how steep it is.

$y = a(x-h)^2 + k$ parabola

$(h,k) =$ vertex