How'd the test go?

How's your 6.6 going? Any questions?

WHERE'S THAT BONUS ON THE HANGING WEIGHT PROBLEM, STEVE?

Circle of radius $r=1$ centered @ $(0,0)$:

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

$$(x(t),y(t)) = (\cos(t), \sin(t)) \text{ parametric.}$$

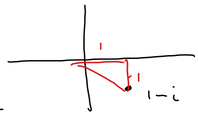
$x=\cos t$

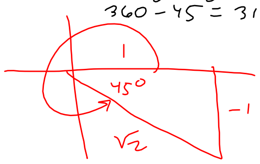
$y=\sin t$

$$360^\circ - 45^\circ = 315^\circ$$

$$x^5-(1-i)=0$$

$$x^5 = 1-i$$





$$2\pi - \frac{\pi}{4} = \frac{(8-1)\pi}{4} = \frac{7\pi}{4}$$

$$z=\sqrt{2}\left(\cos\left(\frac{7\pi}{4}\right)+i\sin\left(\frac{7\pi}{4}\right)\right)$$

inc: $\frac{2\pi}{5}$

$$z_0 = (\sqrt{2})^{\frac{1}{5}}\left(\cos\frac{7\pi}{20} + i\sin\frac{7\pi}{20}\right) \qquad (\sqrt{2})^{\frac{1}{5}} = \left(2^{\frac{1}{2}}\right)^{\frac{1}{5}} = 2^{\frac{1}{10}} = \sqrt[10]{2}$$

$$z_1: \frac{7\pi}{20}+\frac{2\pi}{5}\cdot\frac{4}{4} = \frac{7\pi+8\pi}{20} = \frac{15\pi}{20} = \frac{3\pi}{4}$$

$$z_1 = \sqrt[10]{2}\left(\cos\left(\frac{3\pi}{4}\right)+i\sin\left(\frac{3\pi}{4}\right)\right)$$

$15+8=23$

$23+8=31$

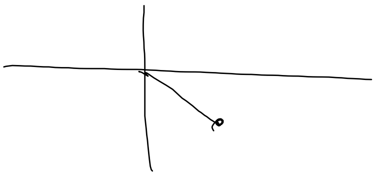
$31+8=39$

$$z_2 = \sqrt[10]{2}\left(\cos\left(\frac{23\pi}{20}\right)+i\sin\left(\frac{23\pi}{20}\right)\right)$$

$$z_3 = \sqrt[10]{2}\left(\cos\left(\frac{31\pi}{20}\right)+i\sin\left(\frac{31\pi}{20}\right)\right)$$

$$z_4 = \sqrt[10]{2}\left(\cos\left(\frac{39\pi}{20}\right)+i\sin\left(\frac{39\pi}{20}\right)\right)$$

$$39+8=47 \qquad \frac{47\pi}{20} = \frac{40\pi}{20}+\frac{7\pi}{20}$$



in degrees: $\frac{315}{5} = 63^\circ$ = argument of 1st root

$\frac{2\pi}{5}$ or $\frac{360^\circ}{5}$ is increment $= 72^\circ$

$63+72 = 135$

$135+72 = 207$

$207+72 = 279$

$279+72 = 351$

$351+72 = 423$
$\underline{-360}$
63

$$\sqrt[10]{2}(\cos 63^\circ + i\sin 63^\circ)$$

$$\sqrt[10]{2}(\cos 135^\circ + i\sin 135^\circ)$$

$$\sqrt[10]{2}(\cos 207^\circ + i\sin 207^\circ)$$

$$\sqrt[10]{2}(\cos 279^\circ + i\sin 279^\circ)$$

$$\sqrt[10]{2}(\cos 351^\circ + i\sin 351^\circ)$$

$x = 3 - 6t$

$y = 6 + 3t$

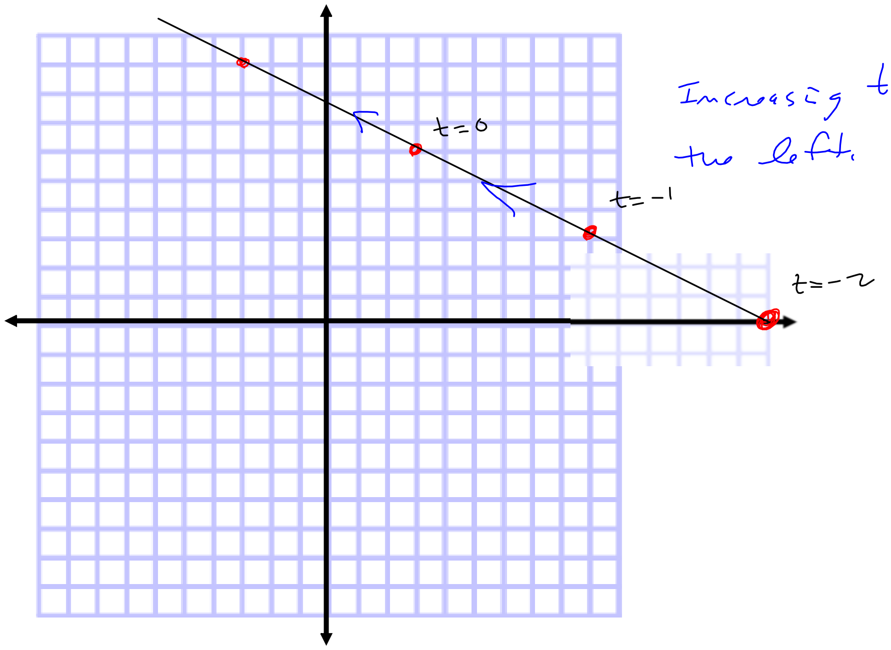
t	x	y
-2	15	0
-1	9	3
0	3	6
1	-3	9
2	-9	12

$x = 3 - 6(-2) = 3 + 12 = 15$

$x = 3 - 6(-1) = 9$

$y = 6 + 3(-1)$

$(15, 0), (9, 3), (3, 6), (-3, 9), (-9, 12)$



Increasing t off to the left.

Eliminate the parameter & express y as a function of x

$x = 3 - 6t \Rightarrow$

$-6t = x - 3$

$t = \frac{x-3}{-6} = \frac{3-x}{6}$

$\Rightarrow y = 6 + 3t = 6 + 3\left(\frac{3-x}{6}\right) = 6 + \frac{3-x}{2} = 6 + \frac{3}{2} - \frac{1}{2}x$

$\Rightarrow \boxed{y = -\frac{1}{2}x + \frac{15}{2}} = y$

$x = 3\cos\theta$
$y = 3\sin\theta$ is a circle!

$\cos\theta = \frac{x}{3}$, $\sin\theta = \frac{y}{3}$

$\left(\frac{x}{3}\right)^2 + \left(\frac{y}{3}\right)^2 = \cos^2\theta + \sin^2\theta = 1$

$\frac{x^2}{9} + \frac{y^2}{9} = 1$

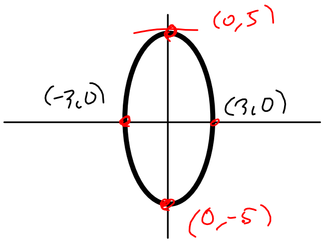
$x^2 + y^2 = 9$ circle radius 3 centered @ (0, 0).

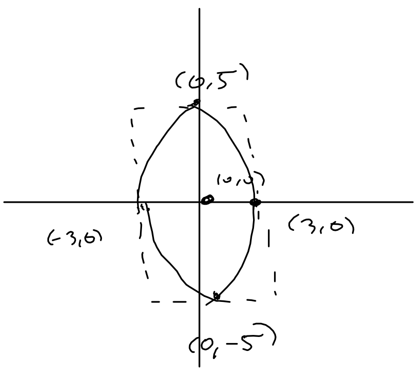
What's This:

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

$y = 5\sin\theta$ $\sin\theta = \frac{y}{5}$

$\frac{x^2}{9} + \frac{y^2}{25} = 1$





6.6 #8

$x = t - 1 \Rightarrow x + 1 = t$

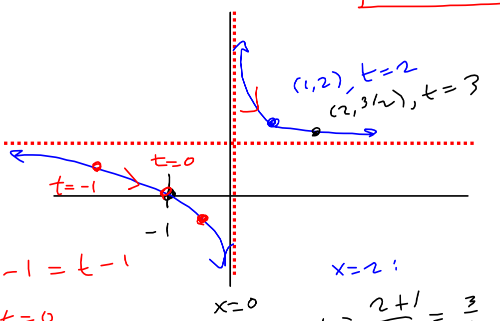
$y = \frac{t}{t-1} = \frac{x+1}{x+1-1} = \frac{x+1}{x}$

$\mathcal{D}: \mathbb{R} \setminus \{0\}.$ $\boxed{\text{V.A.} \quad x = 0}$

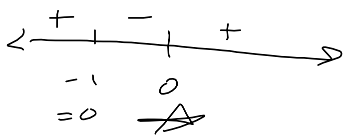
H.A. $\frac{x+1}{x} \xrightarrow{|x| \to \infty} \frac{x}{x} = 1$ $\boxed{y = 1 = \text{H.A.}}$

zeros: $\frac{x+1}{x} = 0 \Rightarrow x + 1 = 0 \Rightarrow x = -1$

$\rightsquigarrow \boxed{(-1, 0) = x\text{-int}}$



$y = 1$



$x = -1 = t - 1$

$t = 0$

$x = -2 = t - 1$

$-1 = t$

$x = 2$:

$y = \frac{2+1}{2} = \frac{3}{2}$

$t = x + 1 = 3$

$x = t - 1$

$y = \frac{t}{t-1}$

$x = 1 \Rightarrow$

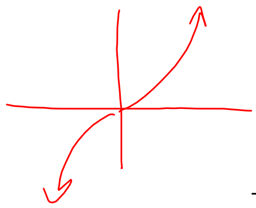
$y = \frac{1+1}{1} = 2$

$(1, 2)$

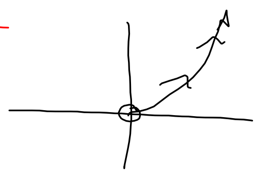
$x = t - 1 = 1 \Rightarrow t = 2$

$x = e^t$ increases

$y = e^{9t} = e^{t \cdot 9} = (e^t)^9 = x^9$!



Now $x = e^t > 0$



Get 6.6 done.

Roll on to S 6.7, 6.8, 6.9

Toughest piece w/o cheat sheet.

Happy Thanksgiving!