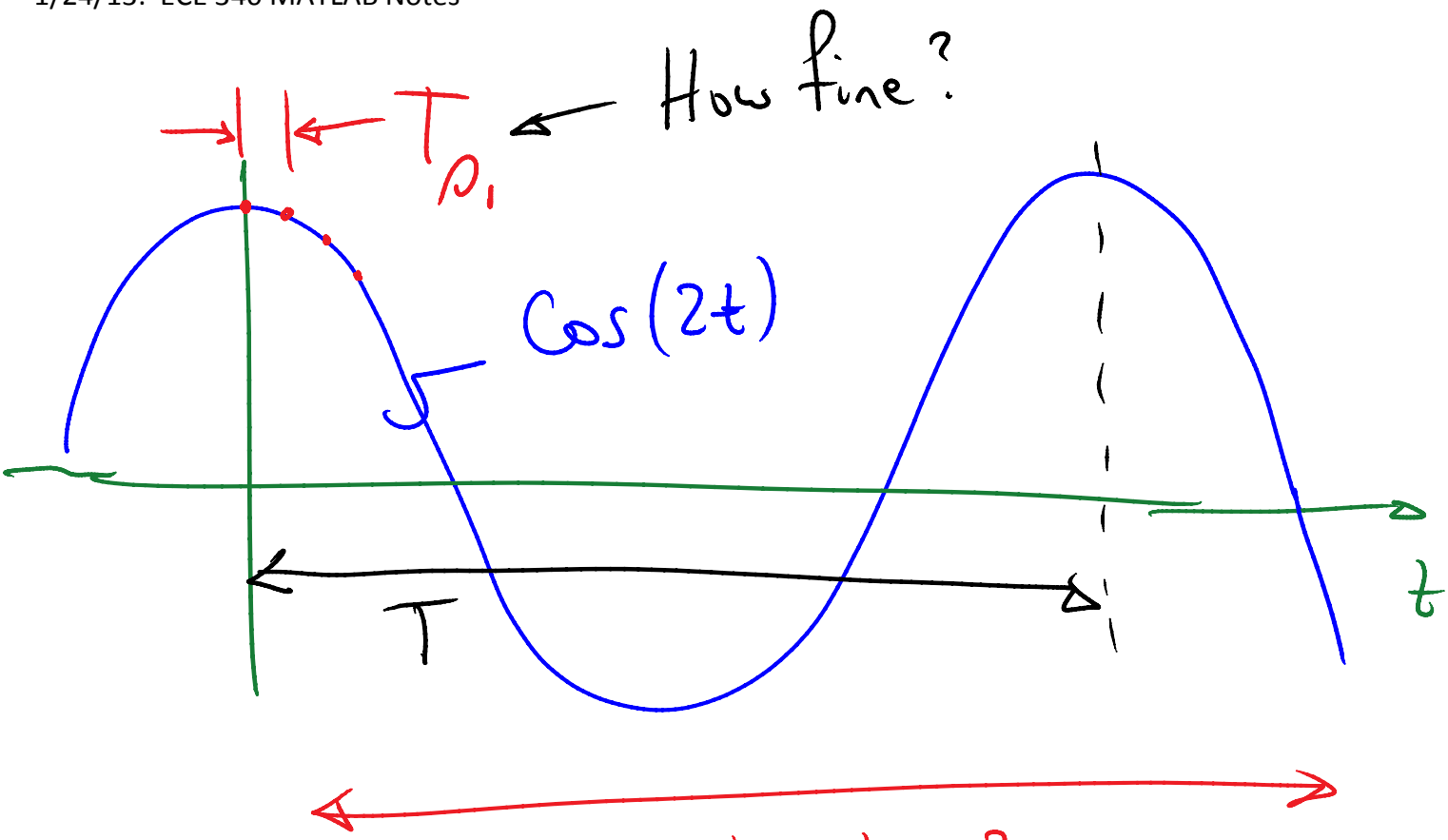


$$\cos(2t) \Longrightarrow \omega = 2 = 2\pi f = \frac{2\pi}{T}$$

$$T = \frac{2\pi}{2} = \pi$$

Simulate for 2 cycles.

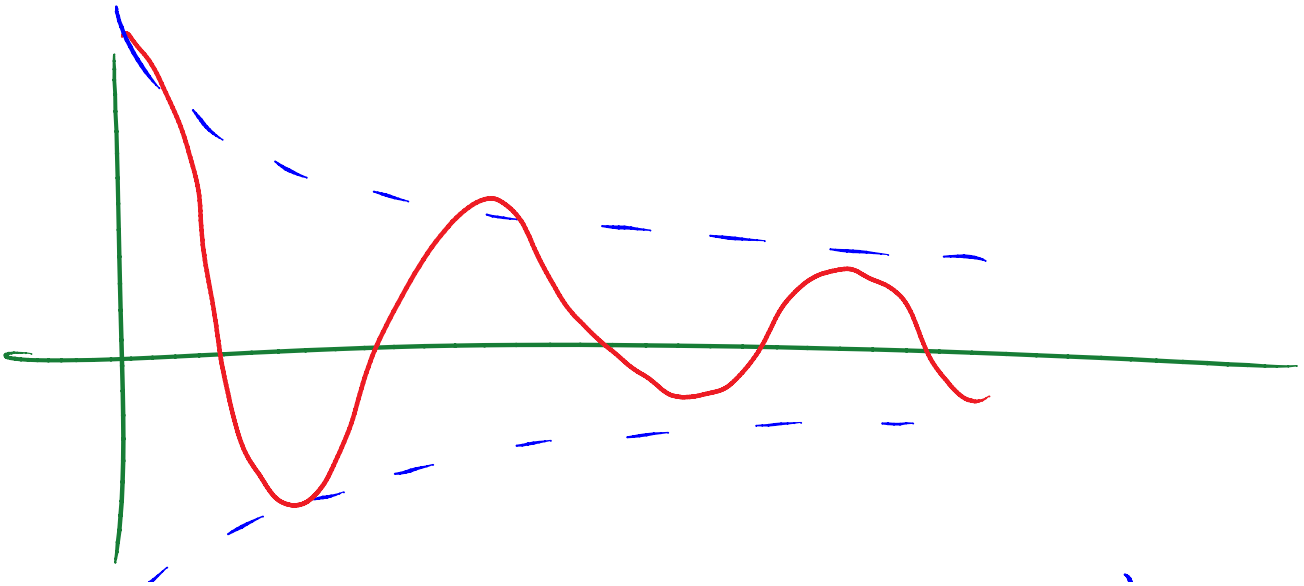
$$T_{end} = 2T = 2\pi \approx 6 \Longrightarrow 8$$

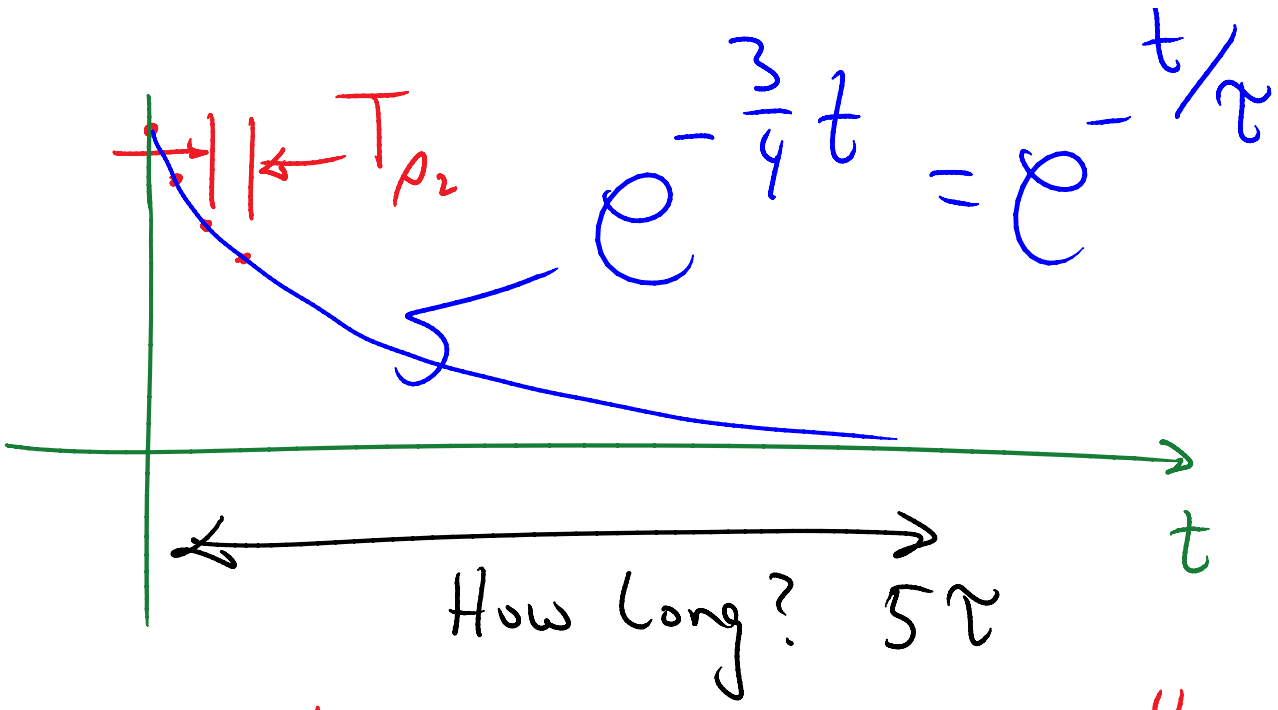
$T_{p_1} = ?$: 100 points in each cycle
T

(20-200 pts per oscillation, pg. 132)

$$T_{p_1} = \frac{\pi}{100} \approx \frac{3}{100} = 0.03$$

time = 0 : Ts : Tend;





$$\left.\frac{3}{4}t\right|_{t=\tau} = 1 \Longrightarrow \tau = \frac{4}{3}$$

$$T_{\rho_2} = \frac{\tau}{10} = \frac{4}{3(10)} = \frac{4}{30} > \frac{4}{40} = 0.1$$

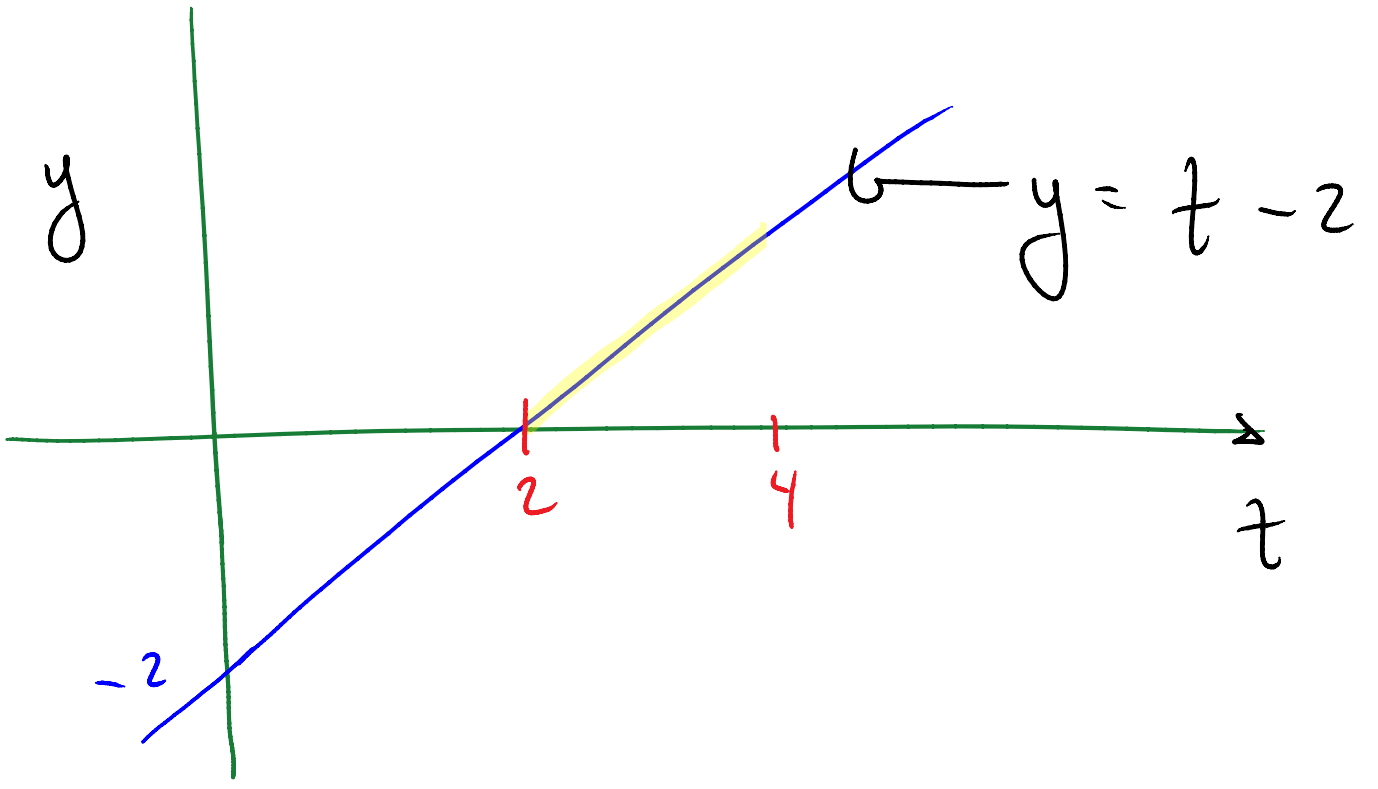
$$T_{sample} = \min\left(T_{\rho_1}, T_{\rho_2}\right)$$

$$T = 5\tau = 5\left(\frac{4}{3}\right) = \frac{20}{3} \simeq 7$$

$$T_{end\,2} = 5\tau = 5\left(\frac{1}{3}\right) = \frac{5}{3} \approx 7$$

$$\Rightarrow \boxed{8}$$

$$e^{-\frac{4}{3}t}\cos(2t)$$



$$(t-2).*\left((t>=2)\&(t<=4)\right)$$

$$G[p] = \frac{p+4}{p^2+6p+5}$$

num = [1, 4]

den = [1, 6, 5]

$$G[p] = \frac{0.25}{p+5} + \frac{0.75}{p+1}$$

$$e^{-5t} \quad e^{-t}$$

$$g(t) = \frac{1}{4} e^{-5t} + \frac{3}{4} e^{-t}$$