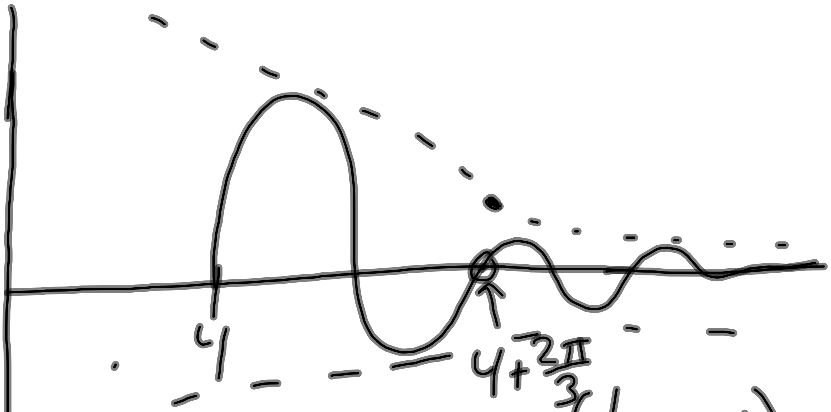


$$y'' + 4y' + 13y = \delta(t-4)$$

$$y(t) = \underbrace{+\frac{1}{3}e^{-2(t-4)}\sin(+3(t-4))}_{\text{graph}}\,u(t-4)$$

$$+3(t-4) = \cancel{0}\ 2\pi$$

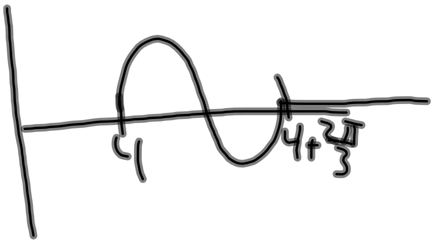
$$t-4 = \frac{2\pi}{3}$$

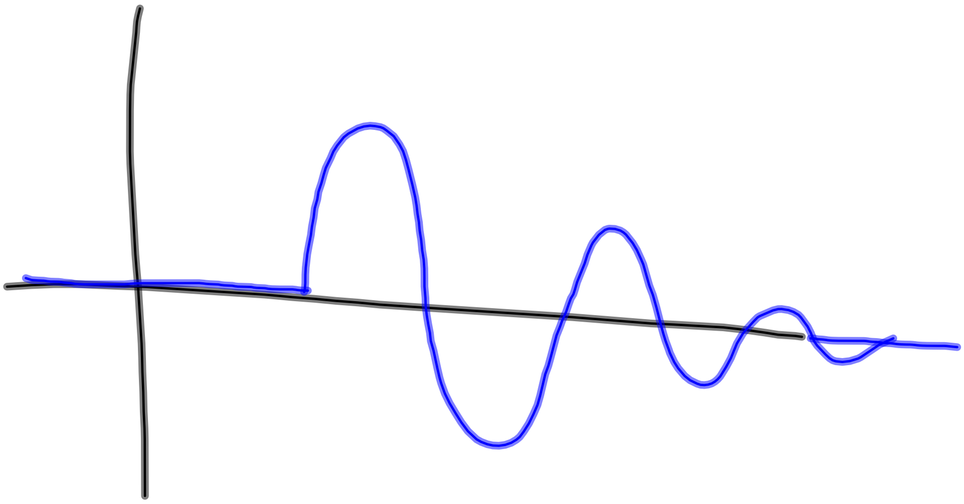
$$t = 4+\frac{2\pi}{3}$$

$$A = -e^{\left(-\frac{4\pi}{3}\right)}$$

$$y'' + 4y' + 13y = \delta(t-4) - e^{\left(-\frac{4\pi}{3}\right)}\delta\left(t-\left(4+\frac{2\pi}{3}\right)\right)$$

$$y(t) = -\frac{1}{3}e^{-2(t-4)}\sin(-3(t-4))\left(u(t-4) - u\left(t-\left(4+\frac{2\pi}{3}\right)\right)\right)$$





$$y(t)=\frac{1}{3}e^{-2(t-4)}\sin[3(t-4)]\cancel{u(t-4)}$$

$$y'(t)=e^{-2(t-4)}\overbrace{\cos[3(t-4)]}^{1}-\frac{2}{3}e^{-2(t-4)}\overbrace{\sin[3(t-4)]}^{0}$$

Amplitude at $t=4$: $\frac{1}{3}e^{-2(4-4)}=\frac{1}{3}$

Amplitude at $t=4+\frac{2\pi}{3}$: $\frac{1}{3}e^{-\frac{4\pi}{3}}$

Mechanically, impulse is change in momentum.

Final Tues 8-10:00 here.

I'll give you a clean formula sheet.

$\vec{x}'' = A\vec{x}$

$x'' = PDP^{-1}\underbrace{\vec{x}}_{\vec{y}}$

$P^{-1}\vec{x}'' = DP^{-1}\vec{x}$

$\vec{y}'' = D\vec{y}$

$A = PDP^{-1}$

$AP = PD$

D diagonal w/ eigenvalues

P has eigenvectors

Final

* no series
* material from Assignments 22-26
* Solving a 2nd order system
  * Laplace
  * change to system of 4 first order
  * Diagonalization
* Convolution

Jun 7-9:23 AM

Office Hrs

Mon 10-2, later
if asked