ELEC 341 – Lecture Notes

Poles & Zeros

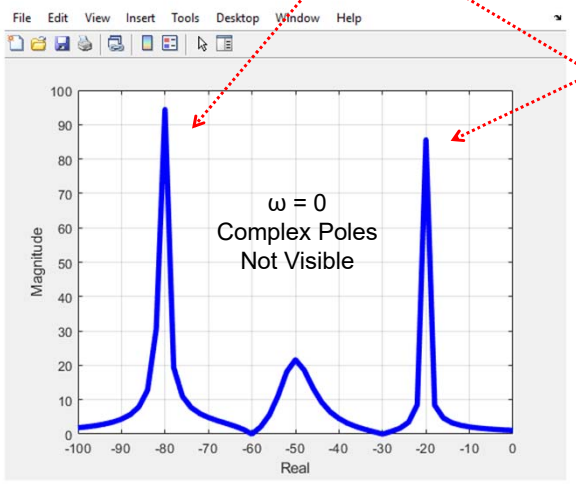
Learning Objectives

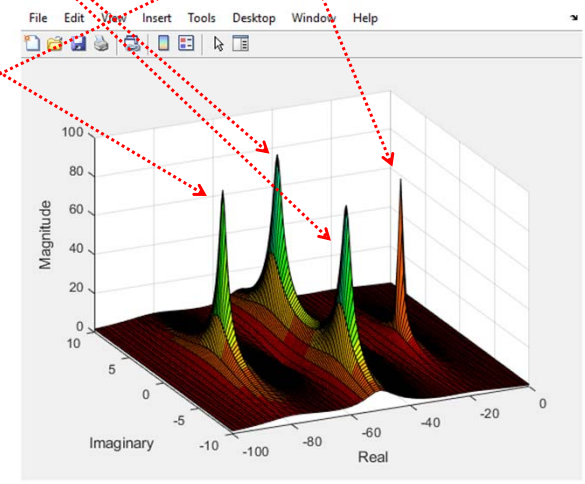
- Poles
- Zeros
- Real & Complex

- Matlab
  - meshgrid()
  - surf()
  - view()
  - colormap()
    - help graph3d for useful maps

Poles

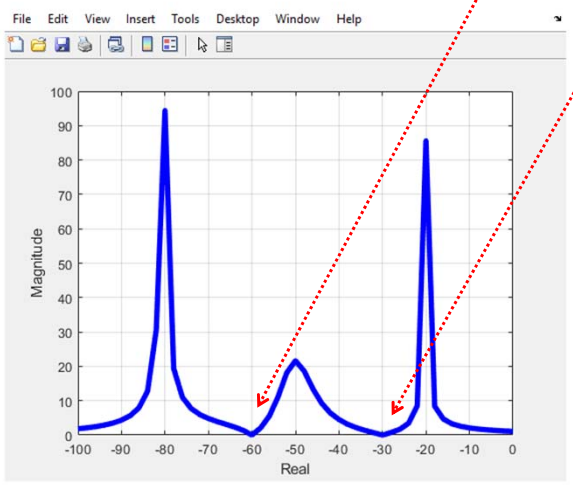
$$\frac{(s+60)(s+30)}{(s+80)(s^2+100s+2525)(s+20)}$$

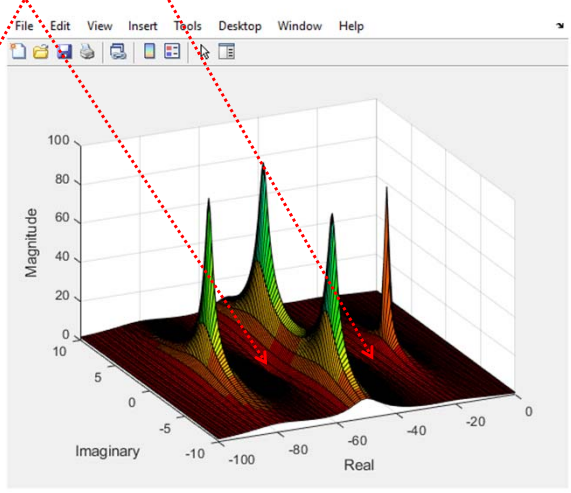




Zeros

$$\frac{(s+60)(s+30)}{(s+80)(s^2+100s+2525)(s+20)}$$



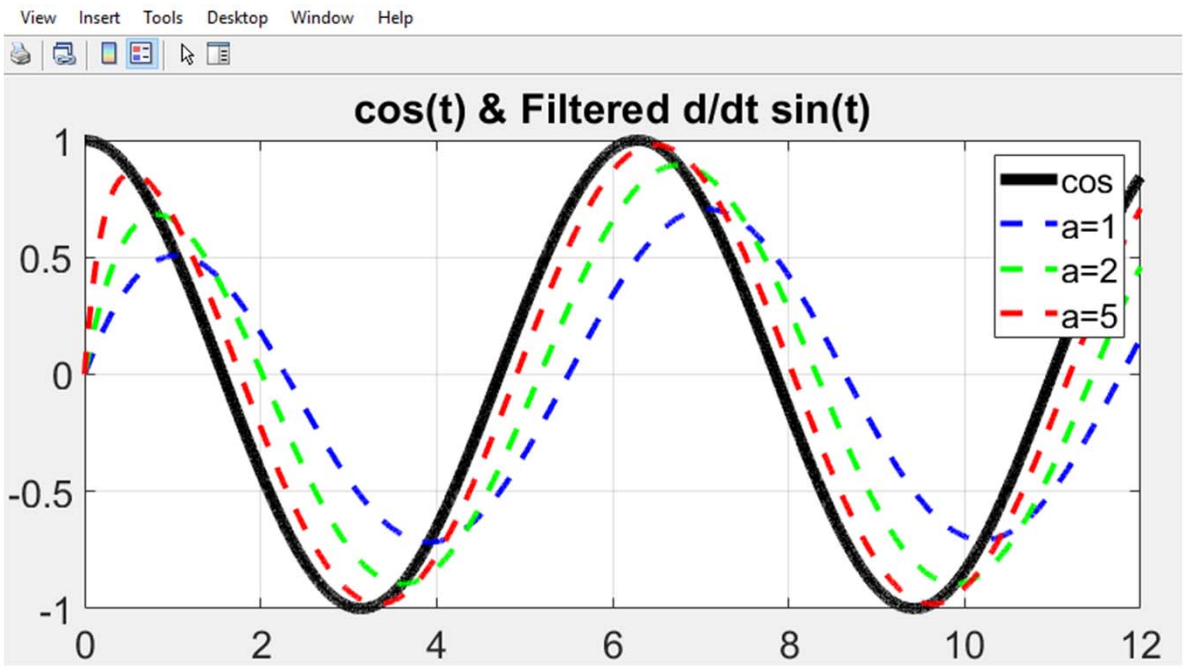


Approximate Derivatives

$$\cos(t) \xrightarrow{\mathcal{L}} \frac{s}{s^2+1}$$

$$\frac{d}{dt}\sin(t) \xrightarrow{\mathcal{L}} \frac{a}{s+a} s \frac{1}{s^2+1} = \frac{as}{(s+a)(s^2+1)}$$

filter constant



Approximate Impulses