

1) model of a system is given as:

$$d^2y/d\theta^2 + 4dy/d\theta + 5y = 6\sin\theta$$

(1) obtain  $y$  as a function of  $\theta$

(2) neglect comp function of  $d$  (25), with  $d$  end of F

(2)0

$$m^2 + 4m + 5 = 0$$

using quad eqn

$$-4 \pm \sqrt{16 - 20}$$

2

$$= \frac{-4 \pm \sqrt{-4}}{2}$$

$$= \frac{-4 \pm j2}{2}$$

$$= -2 \pm j$$

$$y = e^{-2\theta} (A\sin\theta + B\cos\theta)$$

assume  $y = C\sin\theta + D\cos\theta$

$$dy/d\theta = C\cos\theta - D\sin\theta$$

$$d^2y/d\theta^2 = -C\sin\theta - D\cos\theta$$

g ~~cos~~

$$-C \sin \theta - D \cos \theta + 4C \cos \theta - 4D \sin \theta + 5C \sin \theta + 5D \cos \theta =$$

$$6 \sin \theta$$

$$\sin \theta (-C + 4D + 5C) + \cos \theta (-D + 4C + 5D) = 6 \sin \theta$$

$$\sin \theta (4C - 4D) + \cos \theta (4D + 4C) = 6 \sin \theta$$

$$4C - 4D = 6$$

$$4C = 6 - 4D$$

$$C = 6 - 4D / 4$$

$$4D + 4C = 0$$

$$4D + \frac{24 - 16D}{4} = 0$$

$$4$$

$$4D + 6 - 4D = 0$$