Revision exercises on dynamic systems

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EXAM 1

4 exercises
1 T/F

content:
L01 - L07

Kahoot!

8 DECENT WORK AND ECONOMIC GROWTH

PROMOTE SUSTAINED, INCLUSIVE AND SUSTAINABLE ECONOMIC GROWTH, FULL AND PRODUCTIVE EMPLOYMENT AND DECENT WORK FOR ALL

GLOBAL ECONOMIC RECOVERY CONTINUES, BUT ON A SLOW TRAJECTORY

2 BILLION WORKERS ARE IN PRECARIOUS INFORMAL JOBS WITHOUT SOCIAL PROTECTION

GLOBAL UNEMPLOYMENT IS EXPECTED TO FALL BELOW PRE-PANDEMIC LEVELS, BUT NOT IN LOW-INCOME COUNTRIES

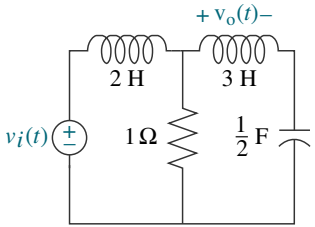
1 IN 4 YOUNG PEOPLE ARE NOT IN EDUCATION, EMPLOYMENT OR TRAINING, WITH YOUNG WOMEN MORE THAN TWICE AS LIKELY AS YOUNG MEN TO BE IN THIS SITUATION

DURING THE PANDEMIC, 4 IN 10 ADULTS IN LOW- AND MIDDLE-INCOME COUNTRIES OPENED THEIR FIRST BANK ACCOUNT

THE SUSTAINABLE DEVELOPMENT GOALS REPORT 2023: SPECIAL EDITION- UNSTATS.UN.ORG/SDGS/REPORT/2023/

Exercises

Exercise L9aE1: Define the transfer function, $G(s) = \dfrac{V_o(s)}{V(s)}$, for the system below.

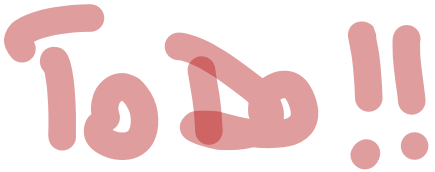


Exercises

Exercise L9aE2: Consider the transfer function below.

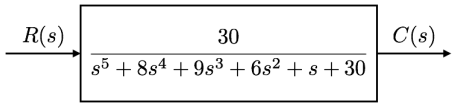
$$G(s) = \frac{Y(s)}{U(s)} = \frac{s+3}{s^2+12s+32}$$

1. Define the system response $y(t)$ for a unit step input, using the inverse Laplace transform.
2. Explain the general meaning of transfer function and the assumptions made regarding the system.



Exercises

Exercise L9aE3: Consider the system given below



1. Obtain a state space representation in phase variables.
2. Identify and explain the meaning of state and output equations and the terms included in them.

Exercises

Exercise L9aE4: Consider the system given below:

$$\begin{cases} \dot{x}_1(t) &= -3x_1(t) + 2x_2(t) + 4u(t) \\ \dot{x}_2(t) &= x_1(t) + 7x_2(t) + 3u(t) \\ y(t) &= x_1(t) + 2x_2(t) \end{cases}$$

1. Obtain the transfer function $G(s) = Y(s)/U(s)$.
2. Obtain the input/output model of the system in the time domain.