Final exam on Mechanics of Structures 3, 29.06.2020
remote method

========== **Solutions sheets must meet the requirements below** ==========

1. Must include the declaration:

I declare that this piece of work, which is the basis for recognition of achieving learning outcomes in the Mechanics of Structures 3 course, was completed on my own.

First and last name (*clearly handwritten*)
Student ID number (*clearly handwritten*)

2. Must be turned in via MS Teams
Turn-in deadline: 29.06.2020, 10:00 (60 minutes after releasing)

Problem 1.

For the grillage in Fig. 1, calculate:

a) circular frequencies of natural vibrations,
b) ordinary frequencies of natural vibrations,
c) periods of natural vibrations.

Assume $EJ = GJ_s$.

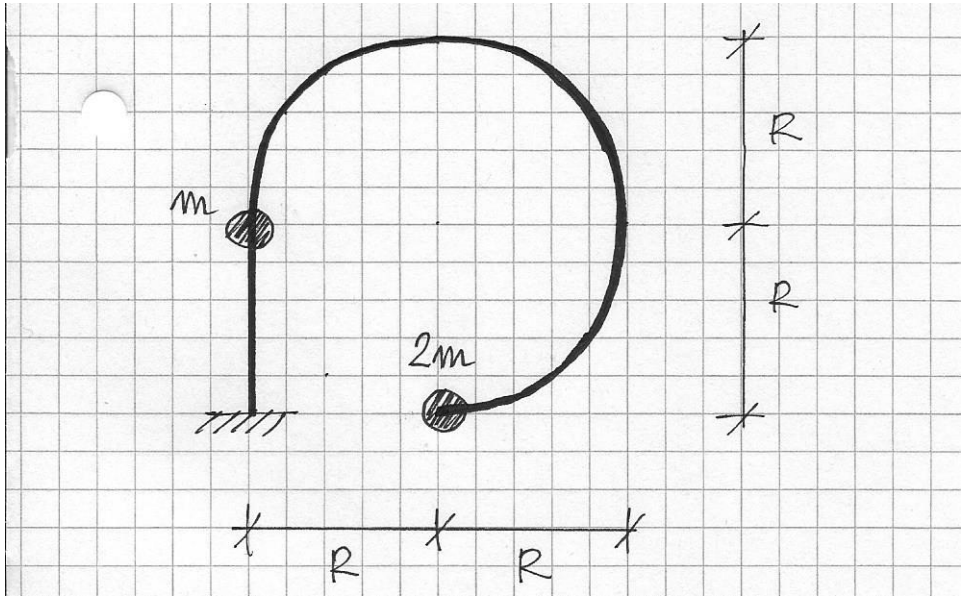

Fig. 1.

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Problem 2.

For a rigid-joint grillage in Fig. 2,

a) define vector **q**,
b) define vector **F**,
c) find matrices determining the stiffness matrix **K**,
d) write down the formula for **K** (no need to calculate **K** explicitly).

Assume: $EJ = GJ_s$.

Use node numbering shown in Fig. 2.

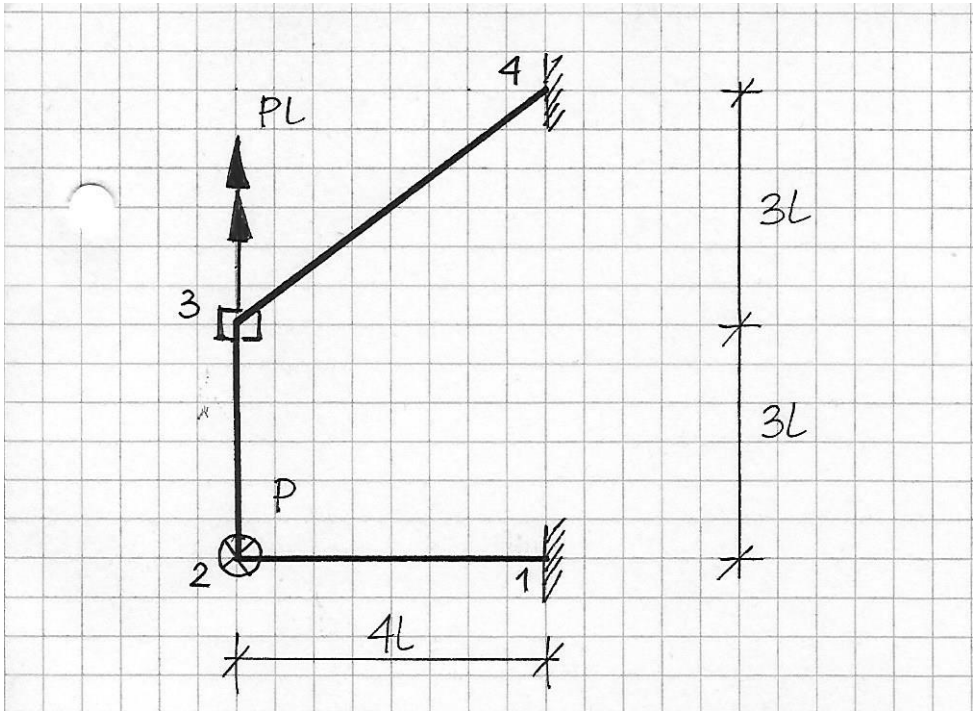

Fig. 2.