Computer Aided Design 1

Practice Exam

Bachelor in Computer Vision

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Intro to Matlab

NOTE
For each question you shall create a script, for example `question1.m`, containing all commands to answer the questions.
Ask me for each question in order to valide!

Problem 1

Make the following variables

1. $a = \begin{bmatrix} 2.59 & 12 & 69 & 32 \end{bmatrix}$
2. $b = \begin{bmatrix} 2.74 \\ 9.3 \\ 2 \\ 79 \end{bmatrix}$
3. $c = \begin{bmatrix} 12 \\ 11.5 \\ \vdots \\ -11.5 \\ -12 \end{bmatrix}$ (all the numbers from 12 to -12 in increments of -0.5).
4. $A = \begin{bmatrix} 10 & \dots & 10 \\ \vdots & \ddots & \vdots \\ 10 & \dots & 10 \end{bmatrix}$ a 10×10 matrix full of 10's
5. $B = \begin{bmatrix} 5 & 0 & \dots & & 0 \\ 0 & \ddots & 0 & \ddots & \\ \vdots & 0 & 1 & 0 & \vdots \\ & \ddots & 0 & \ddots & 0 \\ 0 & & \dots & 0 & 5 \end{bmatrix}$ a 9×9 matrix of all zeros, but with the values $\begin{bmatrix} 5 & 4 & 3 & 2 & 1 & 2 & 3 & 4 & 5 \end{bmatrix}$ on the main diagonal, use **zeros** and **diag**.
6. Create a 3×3 matrix D of random integers with values on the range -100 to 100.

Problem 2

Given the following function

$$s = a\cos(\phi) + \sqrt{b^2 - (a\sin(\phi) - c)^2}$$

Plot s as a function of the angle ϕ when $a = 1$, $b = 1.5$, $c = 0.3$, and $0 \leq \phi \leq 360$.