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★ Course / Week 8: More on Matrix Inversion / 8.2 Gauss-Jordan Elimination

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8.2.1 Solving Ax = b via Gauss-Jordan elimination

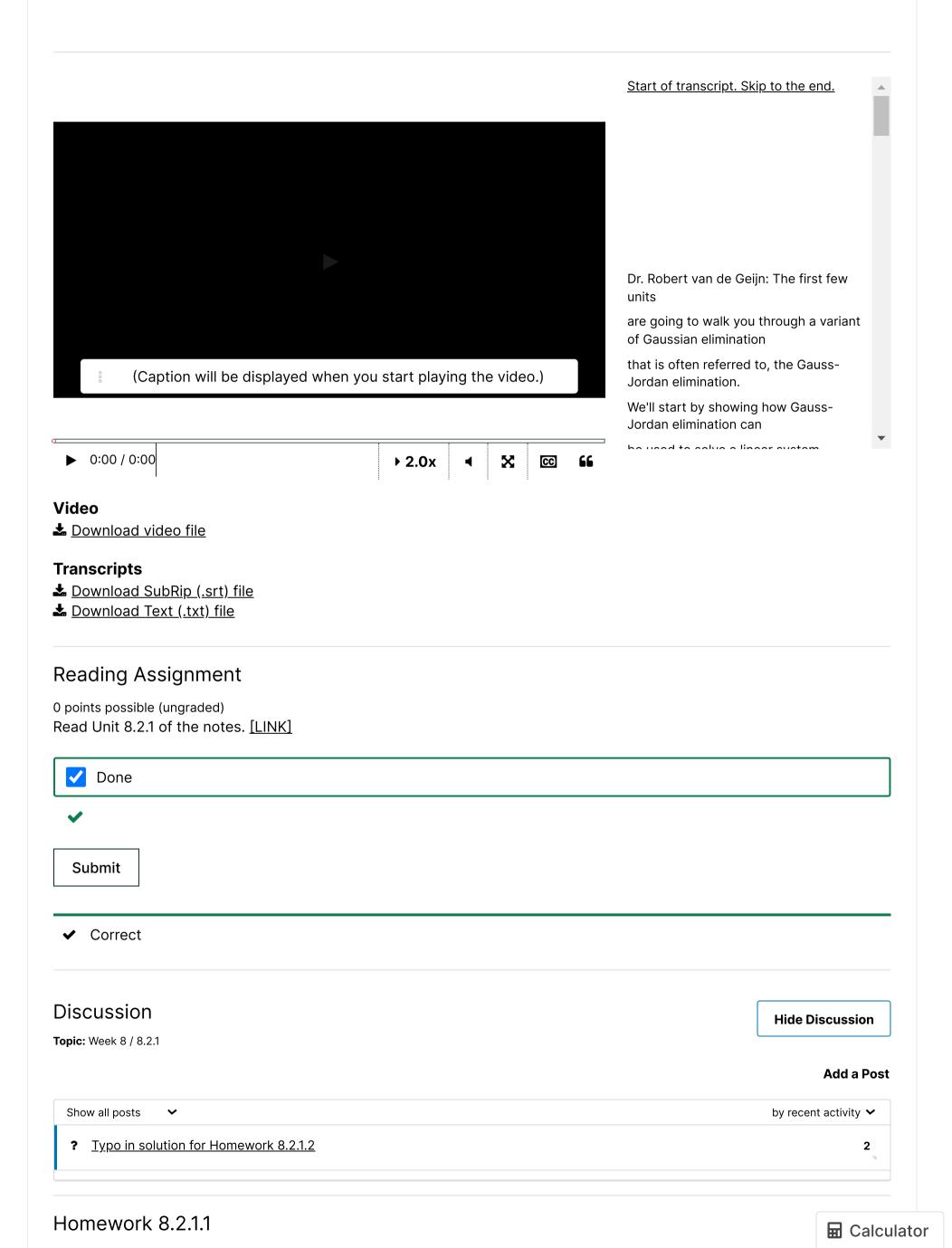
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Week 8 due Nov 26, 2023 15:12 IST Completed

8.2.1 Solving Ax = b via Gauss-Jordan elimination



9/9 points (graded)
Perform the following steps

• To transform the system on the left to the one on the right:

one must subtract $\lambda_{1,0}$ times the first row from the second row and subtract $\lambda_{2,0}$ times the first row from the third row.

$$\lambda_{1,0}=$$
 -1 \checkmark Answer: -1 $\lambda_{2,0}=$ 2 \checkmark Answer: 2

• To transform the system on the left to the one on the right:

one must subtract $\lambda_{0,1}$ times the second row from the first row and subtract $\lambda_{2,1}$ times the second row from the third row.

$$\lambda_{0,1}=$$
 -2 \checkmark Answer: -2 $\lambda_{2,1}=$ 1 \checkmark Answer: 1

• To transform the system on the left to the one on the right:

one must subtract $\lambda_{0,2}$ times the third row from the first row and subtract $\lambda_{1,2}$ times the third row from the second row.

$$\lambda_{0,2}=$$
 -1 \checkmark Answer: - $\overset{\checkmark}{}$ Answer: 2

• To transform the system on the left to the one on the right:

one must multiply the first row by $\delta_{0,0}$, the second row by $\delta_{1,1}$, and the third row by $\delta_{2,2}$.

$$\delta_{0,0}=$$
 $-1/2$ \checkmark Answer: -0.5 $\delta_{1,1}=$ -1 \checkmark Answer: -1 $\delta_{2,2}=$ 1 \checkmark Answer: 1

Submit

Homework 8.2.1.2

6/6 points (graded)

Perform the process illustrated in the last exercise to solve the systems of linear equations

-1

✓ Answer: -1

✓ Answer: -2

✓ Answer: 0

Answer:

• To transform the system on the left to the one on the right:

one must subtract $\lambda_{1,0} = -1$ times the first row from the second row and subtract $\lambda_{2,0} = 1$ times the first row from the third row.

• To transform the system on the left to the one on the right:

one must subtract $v_{0,1} = -2$ times the second row from the first row and subtract $\lambda_{2,1} = 1$ times the second row from the third row.

• To transform the system on the left to the one on the right:

one must subtract $v_{0,2}=-2/3$ times the third row from the first row and subtract $v_{1,2}=4/3$ times the third row from the first row.

 \bullet To transform the system on the left to the one on the right:

$$3\chi_0$$
 = -3 χ_0 = -1
- χ_1 = 2 \longrightarrow χ_1 = -2
- $3\chi_2$ = 0 χ_2 = 1

one must multiply the first row by $\delta_{0,0}=1/3$, the second row by $\delta_{1,1}=-1$, and the third row by $\delta_{2,2}=-1/3$.



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