

Quiz Wed Dec 6

16.3

Omit Sugg HW 16.5 # 7, 13, 15, 25

16.5 Gauss-Jordan Elimination Cont'd

Ex: Solve

$$\begin{cases} x + 2y + 2z = 4 \\ 3x + y + 4z = 6 \\ 4y + 2z = 5 \end{cases}$$

$$\begin{array}{cccc|c} x & y & z & & \# \\ \hline 1 & 2 & 2 & & 4 \\ 3 & 1 & 4 & & 6 \\ 0 & 4 & 2 & & 5 \end{array}$$

$$R_2 - 3R_1 \quad \begin{array}{cccc|c} 1 & 2 & 2 & & 4 \\ \hline 0 & -5 & -2 & & -6 \\ 0 & 4 & 2 & & 5 \end{array}$$

(Current row) - # (pivot row)

$$\frac{R_2}{-5} \quad \begin{array}{cccc|c} 1 & 2 & 2 & & 4 \\ \hline 0 & 1 & \frac{2}{5} & & \frac{6}{5} \\ 0 & 4 & 2 & & 5 \end{array}$$

$$R_1 - 2R_2 \quad \begin{bmatrix} 1 & 0 & \frac{6}{5} & | & \frac{8}{5} \\ 0 & 1 & \frac{2}{5} & | & \frac{6}{5} \\ 0 & 0 & \frac{2}{5} & | & -\frac{1}{5} \end{bmatrix}$$

$$R_3 \div \frac{2}{5} \quad \frac{5}{2} \times R_3 \quad \begin{bmatrix} 1 & 0 & \frac{6}{5} & | & \frac{8}{5} \\ 0 & 1 & \frac{2}{5} & | & \frac{6}{5} \\ 0 & 0 & 1 & | & \frac{1}{2} \end{bmatrix}$$

$$R_1 - \frac{6}{5}R_3 \quad \begin{array}{c} x \quad y \quad z \quad | \quad \# \\ \begin{bmatrix} 1 & 0 & 0 & | & 1 \\ 0 & 1 & 0 & | & 1 \\ 0 & 0 & 1 & | & \frac{1}{2} \end{bmatrix} \end{array}$$

$$1x + 0y + 0z = 1 \Rightarrow x = 1$$

$$(x, y, z) = (1, 1, \frac{1}{2})$$

Ex: Solve by Gauss-Jordan Elimination

$$\begin{cases} 4x + 5y + 5z = 38 \\ x + 2y + z = 16 \\ x + y + z = 7 \end{cases}$$

$$\left[\begin{array}{ccc|c} 4 & 5 & 5 & 38 \\ 1 & 2 & 1 & 16 \\ 1 & 1 & 1 & 7 \end{array} \right]$$

$$R_1 \leftrightarrow R_3 \quad \left[\begin{array}{ccc|c} 1 & 1 & 1 & 7 \\ 1 & 2 & 1 & 16 \\ 4 & 5 & 5 & 38 \end{array} \right]$$

$$\begin{array}{l} R_2 - R_1 \\ R_3 - 4R_1 \end{array} \quad \left[\begin{array}{ccc|c} 1 & 1 & 1 & 7 \\ 0 & 1 & 0 & 9 \\ 0 & 1 & 1 & 10 \end{array} \right]$$

$$R_1 - 1R_2 \quad \left[\begin{array}{ccc|c} 1 & 0 & 1 & -2 \\ 0 & 1 & 0 & 9 \\ 0 & 0 & 1 & 1 \end{array} \right]$$

$$R_3 - 1R_2$$

(current row) - # (pivot row)

$$R_1 - R_3 \quad \left[\begin{array}{ccc|c} 1 & 0 & 0 & -3 \\ 0 & 1 & 0 & 9 \\ 0 & 0 & 1 & 1 \end{array} \right]$$

$$(x, y, z) = (-3, 9, 1)$$

FINAL EXAM

Sat Dec 16

9am - noon

TEC 174

(check bus schedule in advance)

No Music Allowed

Exam Formula Sheet on website

Bring calculator, earplugs

13 Questions

Chapter	% of Marks on Exam
23	24
24	20
27	6
25	12
26	18
16	20

REVIEW PROBLEMS ON WEBSITE.

$$\textcircled{1} \quad \lim_{x \rightarrow -8} \frac{x^2 + 5x - 24}{5x + 40} \quad \left(\frac{0}{0}\right)$$

$$= \lim_{x \rightarrow -8} \frac{\cancel{(x+8)}(x-3)}{5\cancel{(x+8)}}$$

$$= \frac{-11}{5}$$