

Homework - June 7

Section 1.1

18. Solve the augmented matrix $\begin{bmatrix} 1 & 2 & 1 & 4 \\ 0 & 1 & -1 & 1 \\ 1 & 3 & 0 & 0 \end{bmatrix}$. If this matrix is consistent,

the three planes have a point in common.

$$\begin{bmatrix} 1 & 2 & 1 & 4 \\ 0 & 1 & -1 & 1 \\ 1 & 3 & 0 & 0 \end{bmatrix} \sim \begin{bmatrix} 1 & 2 & 1 & 4 \\ 0 & 1 & -1 & 1 \\ 0 & 1 & -1 & -4 \end{bmatrix} \sim \begin{bmatrix} 1 & 2 & 1 & 4 \\ 0 & 1 & -1 & 1 \\ 0 & 0 & 0 & -5 \end{bmatrix}.$$

This matrix is not consistent because we have the equation

$$0x_1 + 0x_2 + 0x_3 = -5$$

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24. a) True.

b) False. Row equivalent means there exists a sequence of row operations to transform one matrix into the other.

c) False. An inconsistent system has no solution.

d) True.