

Advanced Math
8-1 (Day 1) Solutions

1) 3×2

2) 1×4

3) 3×1

4) 3×4

5) 2×2

6) 1×1

7)
$$\left[\begin{array}{ccc|c} 4 & -3 & -5 & \\ -1 & 3 & 12 & \end{array} \right]$$

8)
$$\left[\begin{array}{ccc|c} 7 & 4 & 22 & \\ 5 & -9 & 15 & \end{array} \right]$$

9)
$$\left[\begin{array}{ccc|c} 1 & 10 & -2 & 2 \\ 5 & -3 & 4 & 0 \\ 2 & 1 & 0 & 6 \end{array} \right]$$

10)
$$\left[\begin{array}{ccc|c} 7 & -5 & 1 & 13 \\ 19 & 0 & -8 & 10 \end{array} \right]$$

11)
$$\begin{aligned} 1x + 2y &= 7 \\ 2x - 3y &= 4 \end{aligned}$$

12)
$$\begin{aligned} 7x - 5y &= 0 \\ 8x + 3y &= -2 \end{aligned}$$

13)
$$\begin{aligned} 2x + 5z &= -12 \\ y - 2z &= 7 \\ 6x + 3y &= 2 \end{aligned}$$

15) Reduced row-echelon

16) Reduced row-echelon

17) Neither (leading 2)

18) row-echelon

25 and 26) See next page.

19) $-2R_1 + R_2 ; 2$

21) $-3R_1 + R_2 ; -2, 6$

20) $\frac{1}{3}R_1 ; 2$

$2R_1 + R_3 ; 20, 4$

$$25. \begin{bmatrix} 1 & 1 & 0 & 5 \\ -2 & -1 & 2 & -10 \\ 3 & 6 & 7 & 14 \end{bmatrix} \xrightarrow{\substack{2R_1+R_2 \\ -3R_1+R_3}} \begin{bmatrix} 1 & 1 & 0 & 5 \\ 0 & 1 & 2 & 0 \\ 0 & 3 & 7 & -1 \end{bmatrix} \xrightarrow{-3R_2+R_3} \begin{bmatrix} 1 & 1 & 0 & 5 \\ 0 & 1 & 2 & 0 \\ 0 & 0 & 1 & -1 \end{bmatrix}$$

$$\xrightarrow{-2R_3+R_2} \begin{bmatrix} 1 & 1 & 0 & 5 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & -1 \end{bmatrix} \xrightarrow{-R_2+R_1} \begin{bmatrix} 1 & 0 & 0 & 3 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & -1 \end{bmatrix}$$

$$26. \begin{bmatrix} 1 & 2 & -1 & 3 \\ 3 & 7 & -5 & 14 \\ -2 & -1 & -3 & 8 \end{bmatrix} \xrightarrow{\substack{-3R_1+R_2 \\ 2R_1+R_3}} \begin{bmatrix} 1 & 2 & -1 & 3 \\ 0 & 1 & -2 & 5 \\ 0 & 3 & -5 & 14 \end{bmatrix} \xrightarrow{-3R_2+R_3} \begin{bmatrix} 1 & 2 & -1 & 3 \\ 0 & 1 & -2 & 5 \\ 0 & 0 & 1 & -1 \end{bmatrix}$$

$$\xrightarrow{2R_3+R_2} \begin{bmatrix} 1 & 2 & -1 & 3 \\ 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & -1 \end{bmatrix} \xrightarrow{R_3+R_1} \begin{bmatrix} 1 & 2 & 0 & 2 \\ 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & -1 \end{bmatrix} \xrightarrow{-2R_2+R_1} \begin{bmatrix} 1 & 0 & 0 & -4 \\ 0 & 1 & 0 & 3 \\ 0 & 0 & 1 & -1 \end{bmatrix}$$