(5)

5. Solve the following system of equations:

$$x_1 + 3x_2 + 7x_3 = 28$$
$$2x_1 + 7x_2 + 16x_3 = 64$$
$$3x_1 + 11x_2 + 26x_3 = 103.$$

$$\left[\begin{array}{ccc|c} 1 & 3 & 7 & 28 \\ 2 & 7 & 16 & 64 \\ 3 & 11 & 26 & 103 \end{array}\right]$$

$R2 \mapsto R2 - 2R1$
$R3 \mapsto R3 - 3R1$

$$\left[\begin{array}{ccc|c} 1 & 3 & 7 & 28 \\ 0 & 1 & 2 & 8 \\ 0 & 2 & 5 & 19 \end{array}\right]$$

$R1 \mapsto R1 - 3R2$
$R3 \mapsto R3 - 2R2$

$$\left[\begin{array}{ccc|c} 1 & 0 & 1 & 4 \\ 0 & 1 & 2 & 8 \\ 0 & 0 & 1 & 3 \end{array}\right]$$

$R2 \mapsto R2 - 2R3$
$R1 \mapsto R1 - R3$

$$\left[\begin{array}{ccc|c} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 2 \\ 0 & 0 & 1 & 3 \end{array}\right]$$

So $x_1 = 1$, $x_2 = 2$, $x_3 = 3$