

ECUACIONES DE PRIMER GRADO

Problema 251:

Resolver el sistema:

$$\frac{1}{x} + \frac{1}{y} = \frac{3}{2}$$

$$\frac{1}{x} + \frac{1}{z} = \frac{4}{3}$$

$$\frac{1}{y} + \frac{1}{z} = \frac{5}{6}$$

Solución Problema 251:

$$\frac{1}{y} + \frac{1}{z} = \frac{5}{6}$$

Despejamos:

$$\frac{1}{y} = \frac{5}{6} - \frac{1}{z}$$

Sustituimos su valor en:

$$\frac{1}{x} + \frac{1}{y} = \frac{3}{2}$$

Luego,

$$\frac{1}{x} + \frac{5}{6} - \frac{1}{z} = \frac{3}{2}$$

$$\frac{1}{x} - \frac{1}{z} = \frac{3}{2} - \frac{5}{6}$$

$$\frac{1}{x} - \frac{1}{z} = \frac{9-5}{6} = \frac{4}{6} = \frac{2}{3}$$

$$\frac{1}{x} - \frac{1}{z} = \frac{2}{3}$$

Sumamos miembro a miembro:

$$\frac{1}{x} + \frac{1}{z} = \frac{4}{3}$$

$$\frac{1}{x} - \frac{1}{z} = \frac{2}{3}$$

Quedando:

$$\frac{2}{x} = \frac{4}{3} + \frac{2}{3} = \frac{6}{3} = 2$$

$$\frac{2}{x} = 2$$

Luego,

$$x = \frac{2}{2} = 1$$

$$x = 1$$

Sustituimos su valor en:

$$\frac{1}{x} + \frac{1}{z} = \frac{4}{3}$$

$$1 + \frac{1}{z} = \frac{4}{3}$$

$$\frac{1}{z} = \frac{4}{3} - 1 = \frac{4 - 3}{3} = \frac{1}{3}$$

Quedando:

$$\frac{1}{z} = \frac{1}{3}$$

Luego,

$$z = 3$$

Sustituimos el valor de z en:

$$\frac{1}{y} + \frac{1}{z} = \frac{5}{6}$$

$$\frac{1}{y} + \frac{1}{3} = \frac{5}{6}$$

$$\frac{1}{y} = \frac{5}{6} - \frac{1}{3} = \frac{5-2}{6} = \frac{3}{6} = \frac{1}{2}$$

$$\frac{1}{y} = \frac{1}{2}$$

Luego:

$$\mathbf{y = 2}$$