

$$\begin{cases} \frac{1}{16}x + \frac{1}{15}y = \frac{9}{20} \\ \frac{1}{20}x - \frac{1}{27}y = \frac{4}{25} \end{cases}$$

Solution.

Subtract $\left(\frac{4}{5} \times \text{equation 1}\right)$ from equation 2:

$$\begin{cases} \frac{1}{16}x + \frac{1}{15}y = \frac{9}{20} \\ 0x - \frac{61}{675}y = -\frac{1}{5} \end{cases}$$

Multiply equation 1 by 240:

$$\begin{cases} 15x + 16y = 108 \\ 0x - \frac{61}{675}y = -\frac{1}{5} \end{cases}$$

Multiply equation 2 by -675 :

$$\begin{cases} 15x + 16y = 108 \\ 61y = 135 \end{cases}$$

Swap the equations and find y :

$$\begin{cases} y = \frac{135}{61} \\ 15x + 16y = 108 \end{cases}$$

Substitute y into second equation:

$$\begin{cases} y = \frac{135}{61} \\ 15x + 16 \cdot \frac{135}{61} = 108 \end{cases}$$

Find x :

$$\begin{cases} y = \frac{135}{61} \\ 15x = \frac{4428}{61} \end{cases}$$

$$\begin{cases} y = \frac{135}{61} \\ x = \frac{1476}{305} \end{cases}$$

Answer:

$$\left(\frac{1476}{305}, \frac{135}{61}\right)$$