Solve by Substitution.

$$\begin{cases} 3(x+2)-(y-7)=0 \\ 2(x-1)-3(y-3)=0 \end{cases}$$

Let's expand and collect like terms to get the system in the form $\begin{cases} ax+by=c \\ dx+ey=f \end{cases}$ which is more convenient.

$$\begin{cases} 3x+6-y+7=0 \\ 2x-2-3y+9=0 \end{cases}$$

$$\begin{cases} 3x-y=-13 \quad (1) \checkmark \\ 2x-3y=-7 \quad (2) \end{cases}$$

From (1) we get $y=3x+13$ (1)'

Sub into (2)'

$2x-3(3x+13)=-7$

$2x-9x-39=-7$

$-7x-39=-7$

$-7x=39-7$

$-7x=32$

$x=-\frac{32}{7}$

Sub into (1)' $y=3\left(-\frac{32}{7}\right)+13$

$y=-\frac{96}{7}+\frac{91}{7}$

$y=-\frac{5}{7}$

$\therefore$ POI: $\left(-\frac{32}{7}, -\frac{5}{7}\right)$