Mathematics 10D

1.4 – Solving POI by Substitution

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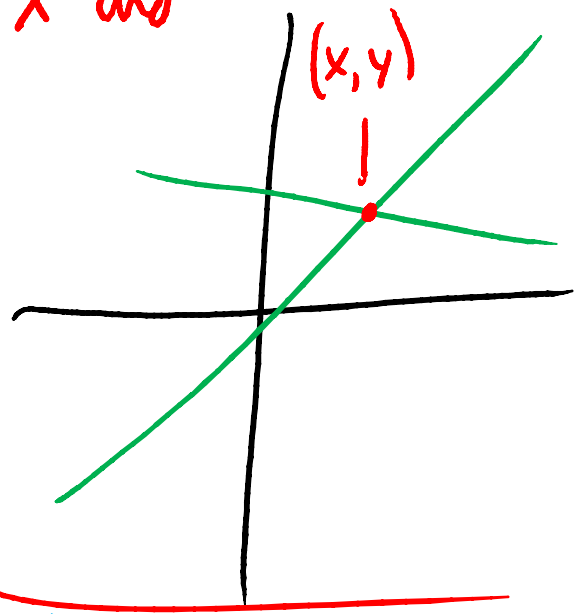
$y = 6x - 12$

$y = -5x + 21$

- Assume that the x and y are the same



① solve one equation to $y =$ ____ or $x =$ ____

② Subsitute that in to the x or y of the other equation.

③ solve

$6x - 12 = -5x + 21$

(+5x, -5x)

$+12 \quad +12$

$11x = 33$

$x = 3$

$y = 6(3) - 12$

$y = 18 - 12$

$y = 6$

$\therefore$ PoI is $(3, 6)$

$5x + 4y = -9$

$y = 7x + 6$

$5x + 4(7x+6) = -9$

$5x + 28x + 24 = -9 - 24$

$\frac{33x}{33} = \frac{-33}{33}$

$x = -1$

$y = 7(-1) + 6$

$y = -7 + 6$

$y = -1$

$\therefore$ POI is $(-1, -1)$

$$1x - 3y = -14 \Rightarrow x = 3y - 14$$
$$2x - 1y = -18$$

$2(3y-14) - y = -18$

$6y - 28 - y = -18$ (+28)

$5y = 10$

$y = 2$

$x = 3(2) - 14$

$x = 6 - 14$

$x = -8$

$\therefore$ POI is $(-8, 2)$

$3x - 2y = 2$ $\xrightarrow{-3x}$ $\Rightarrow$ $\frac{-2y}{-2} = \frac{-3x}{-2} + \frac{2}{-2}$

$7x + 8y = -8$

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

$7x + \frac{8}{1}\left(\frac{3}{2}x - 1\right) = -8$

$7x + 12x - 8 \overset{+8}{} = -8 \overset{+8}{}$

$\frac{19x}{19} = \frac{0}{19}$

$x = 0$

$y = \frac{3}{2}(0) - 1$

$y = -1$

$\therefore$ POI is $(0, -1)$