Exercise 2.5

Solve the following equations:

12. $x^2 - y^2 = 24$

$x - 2y = 3 \Rightarrow X = 3 + 2y$ ① *Rewrite linear*

② *Sub in*

$(3+2y)^2 - y^2 = 24$

③ *Solve*

$9 + 12y + 4y^2 - y^2 = 24$

$3y^2 + 12y - 15 = 0$

$y^2 + 4y - 5 = 0$

$(y-1)(y+5) = 0$

$y = 1 \quad \text{or} \quad -5$

④ *Sub back into linear*

$y = 1$

$\Rightarrow X = 3 + 2(1) = 5$

pt. $(5, 1)$

$y = -5$

$\Rightarrow X = 3 + 2(-5)$

$= 3 - 10 = -7$

pt $(-7, -5)$

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p.12-13 Example

Solve for x, y and z:

$x + 2y + z = 3$ ①
$5x - 3y + 2z = 19$ ②
$3x + 2y - 3z = -5$ ③

$5x - 3y + 2z = 19 \quad$ ②
$-2x - 4y - 2z = -6 \quad$ ① * -2

$3x - 7y = 13 \quad$ ④

$3x + 2y - 3z = -5 \quad$ ③
$3x + 6y + 3z = 9 \quad$ ① * 3

$6x + 8y = 4$

$3x + 4y = 2 \quad$ ⑤

$3x - 7y = 13 \quad$ ④
$-3x - 4y = -2 \quad$ ⑤ * -1

$-11y = 11$

$y = -1$

$3x + 4(-1) = 2$
$3x - 4 = 2$
$3x = 6$
$x = 2$

$x + 2y + z = 3$
$2 + 2(-1) + z = 3$

$z = 3$

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