

Solve $2x - 2y - 2z = 2$ ①
 $2x - 3y + z = 10$ ②
 $x + y - 2z = 0$ ③

$$\begin{array}{r} 2x - 2y - 2z = 2 \\ 4x - 6y + 2z = 20 \\ \hline \end{array}$$

$$6x - 8y = 22$$

$$3x - 4y = 11 \quad \text{④}$$

$$\begin{array}{r} 2x - 2y - 2z = 2 \\ -x - y + 2z = 0 \\ \hline \end{array}$$

$$x - 3y = 2 \quad \text{⑤}$$

$$\begin{array}{r} 3x - 4y = 11 \\ -3x + 9y = -6 \\ \hline \end{array}$$

$$5y = 5$$

$$y = 1$$

$$x - 3(1) = 2$$

$$x - 3 = 2$$

$$x = 5$$

$$2(5) - 3(1) + z = 10$$

$$10 - 3 + z = 10$$

$$z = 3$$

2005

1 (a) Solve the simultaneous equations:

$$\frac{x}{5} - \frac{y}{4} = 0$$

$$3x + \frac{y}{2} = 17$$

$$(x20) \quad 4x - 5y = 0$$

$$(x2) \quad 6x + y = 34$$

$$4x - 5y = 0$$

$$(x5) \quad \begin{array}{r} 30x - 5y = 170 \\ \hline \end{array}$$

$$34x = 170$$

$$x = 5$$

$$6(5) + y = 34$$

$$30 + y = 34$$

$$y = 4$$

p.12 Example

Solve for x and y the simultaneous equations:

$$\frac{x+1}{2} - \frac{y+3}{3} = 4, \quad x + \frac{y-3}{2} = \frac{1}{2}$$

$$\begin{aligned} (x_1) \quad & 3(x+1) - 2(y+3) = 24 \\ & 3x+3 - 2y-6 = 24 \\ & 3x-2y = 27 \end{aligned}$$

$$\begin{aligned} (x_2) \quad & 3x - 2y = 27 \\ & 4x + 2y = 8 \\ \hline & 7x = 35 \\ & x = 5 \end{aligned}$$

$$\begin{aligned} (x_2) \quad & 2x + y - 3 = 1 \\ & 2x + y = 4 \end{aligned}$$

$$\begin{aligned} & 2(5) + y = 4 \\ & 10 + y = 4 \\ & y = -6 \end{aligned}$$

2006

2 (a) Solve the simultaneous equations:

$$y = 2x - 5$$

$$x^2 + xy = 2$$

Sub Linear in and solve

$$\begin{aligned} \Rightarrow \quad & x^2 + x(2x-5) = 2 \\ & x^2 + 2x^2 - 5x = 2 \\ & 3x^2 - 5x - 2 = 0 \\ & (3x+1)(x-2) = 0 \\ & \begin{array}{l|l} 3x+1=0 & x-2=0 \\ 3x=-1 & x=2 \\ x=-\frac{1}{3} & \end{array} \end{aligned}$$

Sub back into linear

$$\begin{aligned} & x = -\frac{1}{3} \\ \Rightarrow \quad & y = 2\left(-\frac{1}{3}\right) - 5 = -\frac{2}{3} - 5 \\ & = -\frac{2}{3} - \frac{15}{3} = -\frac{17}{3} \text{ or } -5\frac{2}{3} \\ & \text{pt. } \left(-\frac{1}{3}, -5\frac{2}{3}\right) \\ & x = 2 \\ \Rightarrow \quad & y = 2(2) - 5 = 4 - 5 = -1 \\ & \text{pt. } (2, -1) \end{aligned}$$