Algebra 1

Section 1.9 Solving simultaneous linear equations

PROJECT MATHS
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1. Solving simultaneous linear equations with two variables

Example 1

Solve the equations $3x - y = 1$ and $x - 2y = -8$.

Elimination
method

$$3x - y = 1 \quad \text{①}$$
$$x - 2y = -8 \quad \text{②}$$

-2 ①
②

$$-6x + 2y = -2$$
$$+x - 2y = -6$$
$$\overline{}$$
$$\frac{-5x}{-5} = \frac{-10}{-5}$$

$$x = 2$$

Sub in ①

$$3(2) - y = 1$$
$$6 - y = 1$$
$$5 = y$$

$$pt\ (2, 5)$$

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substitution method

$$3x - y = 1 \quad \textcircled{1}$$
$$x - 2y = -8 \quad \textcircled{2}$$

$\textcircled{1} \quad y = ?$

$$-y = 1 - 3x$$
$$y = -1 + 3x$$
$$y = 3x - 1 \quad \textcircled{3}$$

$\textcircled{3} \curvearrowright \textcircled{2}$

$$x - 2(3x - 1) = -8$$
$$x - 6x + 2 = -8$$
$$-5x = -10$$
$$x = 2$$

$\curvearrowright \textcircled{3}$

$$y = 3(2) - 1 = 6 - 1$$

$$y = 5$$