

Algebra 18 — Simultaneous Equations in Three Variables

LCHL · Algebra | Tutorial questions & answers | gktuition.ie

ON THE LCHL PAST PAPERS · 2024 P1 Q1(c) (main sitting, 10 marks) · 2023 P1 Q1(a) (deferred, 15 marks) · 2022 P1 Q2(b)(ii) (main sitting, 15 marks) · 2018 P1 Q1(a) (main sitting, 15 marks)

How to use this worksheet: these are the exact questions worked in this tutorial, in order. Try each one yourself first — the time it is posed in the video is shown, so you can pause before Paul solves it. Final answers are at the back; the full method is in the video.

Worked examples (in the video)

Example 1. A: $3x + 4y - 2z = 29$; B: $2x + y - 3z = 16$; C: $4x - y + 4z = 0$ (worked 00:00-08:11).

Questions

Solve each system of simultaneous equations

Q1(i). A: $2x + 4y + z = 5$ B: $3x - y - z = 2$ C: $5x - 6y + 3z = -\frac{25}{2}$

Posed at 08:46 in the tutorial.

Q1(ii). A: $14x - 7y - z = -6$ B: $6x + 4z = 2$ (no y) C: $4x + 3y - 5z = 18$

Posed at 08:46 in the tutorial.

Q1(iii). A: $\frac{x}{2} - \frac{4y}{3} + 4z = 3$ B: $\frac{x}{4} - y + \frac{z}{2} = -\frac{7}{4}$ C: $x + y + z = \frac{13}{2}$

Posed at 08:46 in the tutorial.

Answers

You can find the final answers to these questions below — pause the video and check yourself; the worked method is in the tutorial.

Example 1. $x = 3, y = 4, z = -2$

Q1(i). $x = \frac{1}{2}, y = \frac{3}{2}, z = -2$

Q1(ii). $x = 1, y = 3, z = -1$

Q1(iii). $x = 2, y = 3, z = \frac{3}{2}$

Overlaps with these tutorials

Algebra 19 — Simultaneous Equations by Substitution. The companion technique; some systems are cheaper one way, some the other. Either order works — do them as a pair.

Algebra 14 — Manipulation of Formula. The rearrangement discipline (multiply through, isolate, divide) scaled up to a system.