JCHL Algebra 13 — Solving Quadratic Equations

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ON THE JC PAST PAPERS · 2025 JCHL Q13(c) — 5 marks · 2024 JCHL Q12(c)(ii) — 20 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. Solve $x^2 + 7x + 12 = 0$. *(worked 00:50–03:00)*.

Example 2. Solve $3x^2 - 23x + 14 = 0$. *(worked 03:22–05:38)*.

Example 3. Solve $3x^2 - 9x = 0$ (no plain number → common-factor method). *(worked 05:42–08:22)*.

Questions

Q1(i). Solve $x^2 - 2x - 15 = 0$.

Posed at 08:50 in the tutorial.

Q1(ii). Solve $5x^2 + 36x + 7 = 0$.

Posed at 09:41 in the tutorial.

Q1(iii). Solve $x^2 - 7x = 0$.

Posed at 10:58 in the tutorial.

Q1(iv). Solve $16x^2 - 1 = 0$.

Posed at 12:26 in the tutorial.

Q1(v). Solve $x^2 - 6x + 9 = 0$.

Posed at 14:12 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. $(x+3)(x+4) = 0 \rightarrow x = -3$ or $x = -4$

Example 2. $(3x-2)(x-7) = 0 \rightarrow x = \frac{2}{3}$ or $x = 7$

Example 3. $3x(x-3) = 0 \rightarrow x = 0$ or $x = 3$

Q1(i). $(x+3)(x-5) = 0 \rightarrow x = -3$ or $x = 5$

Q1(ii). $(5x+1)(x+7) = 0 \rightarrow x = -\frac{1}{5}$ or $x = -7$

Q1(iii). $x(x-7) = 0 \rightarrow x = 0$ or $x = 7$

Q1(iv). $(4x-1)(4x+1) = 0 \rightarrow x = \frac{1}{4}$ or $x = -\frac{1}{4}$

Q1(v). $(x-3)(x-3) = 0 \rightarrow x = 3$ (a repeated root)

Overlaps with these tutorials

Builds on: Algebra 10 (factorising quadratics).

Next: Algebra 14 — the minus b formula (for quadratics that will not factorise nicely).