

Algebra 4 — Revision Of Junior Cert Fractions

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ON THE LCHL PAST PAPERS · 2022 P1 Q2(b) (deferred, 7 marks) · 2020 P1 Q7(b)(i) (main sitting, 7 marks) · 2020 P1 Q7(b)(ii) (main sitting, 7 marks) · 2020 P2 Q6(b)(ii) (main sitting, 8 marks) · 2019 P1 Q1(b) (main sitting, 12 marks)

How to use this sheet: 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. Common denominator: $\frac{3}{4} + \frac{x}{3}$ (worked 00:17–01:37).

Example 2. Algebraic fraction division: $\frac{(x+3)}{(2x+7)} \div \frac{(x+3)}{(4x+14)}$ (worked 01:37–04:20).

Example 3. Rational equation: $\frac{x}{(x-1)} + \frac{1}{(x+1)} = 1$ (worked 04:20–07:56).

Example 4. Rationalising the denominator: $\frac{4}{(2-\sqrt{3})}$ (worked 07:56–11:54).

Questions

Simplify each of the following

Q1.i. $(a + b) / (1/a + 1/b)$

Posed at 11:54 in the tutorial.

Q1.ii. $\frac{27x^3 + 125}{9x^2 + 30x + 25}$

Posed at 11:54 in the tutorial.

Q1.iii. $-\frac{4}{-3 + \sqrt{5}}$

Posed at 11:54 in the tutorial.

Solve each of the following

Q2.i. $\frac{2x-5}{3} = \frac{x-2}{2}$

Posed at 12:50 in the tutorial.

Q2.ii. $\frac{5}{x-2} - \frac{3}{x+2} = 2$

Posed at 12:50 in the tutorial.

Answers

Final answers only — pause the video and check yourself; the worked method is in the tutorial.

Example 1. $(9 + 4x)/12$

Example 2. 2

Example 3. $x = 0$

Example 4. $8 + 4\sqrt{3}$

Q1.i. ab

Q1.ii. $\frac{9x^2 - 15x + 25}{3x + 5}$

Q1.iii. $3 + \sqrt{5}$

Q2.i. $x = 4$

Q2.ii. $x = 4$ or $x = -3$

Overlaps with these tutorials

Algebra 5 — Fractions Part 2. Drills flip-and-multiply on much harder expressions. Do Algebra 4 first.

Algebra 7 — Rational Inequalities. The same denominator-clearing move, made sign-safe for inequalities.

Algebra 17 — Surd Equations. Builds on this video's surd arithmetic ($\sqrt{a} \times \sqrt{a} = a$).