

Algebra 16 — Modulus Graphs

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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. $f(x) = |x + 1|$ — motivating example with a full value table (*worked 00:00–06:07*).

Example 2. $f(x) = |x - 2|$ — the three-point method (*worked 06:13–12:18*).

Questions

Q1. Draw $f(x) = |x - 3|$ and $g(x) = 2$ on the same coordinate grid. Hence find the range of x for which (i) $f(x) > g(x)$; (ii) $g(x) > f(x)$.

Posed at 13:15 in the tutorial.

Q2. Draw $h(x) = |2x + 5|$ and $g(x) = 3$ on the same coordinate grid. Hence find the values of x for which $h(x) = g(x)$.

Posed at 13:15 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. V-graph with vertex $(-1, 0)$; never below the x -axis

Example 2. V-graph: vertex $(2, 0)$, through $(1, 1)$ and $(3, 1)$

Q1. (i) $x < 1$ or $x > 5$; (ii) $1 < x < 5$

Q2. $x = -4$ or $x = -1$

Overlaps with these tutorials

Algebra 15 — Modulus Equations. The algebraic engine behind every intersection here. Do Algebra 15 first.

Algebra 8 — Quadratic Graphs. The same sketch-from-key-points discipline, on parabolas.

Functions and Graphs — graphing toolkit. Modulus graphs reappear there inside the wider transformation story.