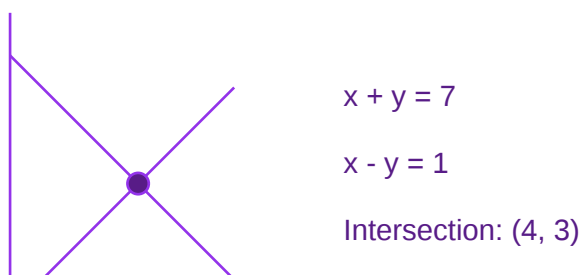


Systems of linear equations

Choose substitution or elimination, interpret intersections, and distinguish one, no and infinitely many solutions.



Reasoning at a glance

1. A simultaneous solution

A solution must satisfy both equations. For $x + y = 7$ and $x - y = 1$, (4, 3) satisfies each.

2. Substitution

When one variable is isolated, replace that variable in the other equation with its equal expression.

3. Elimination

Add or subtract equations to cancel a variable. Multiply an entire equation first when coefficients need to match.

4. Graphical interpretation

Two lines with different slopes intersect once. Parallel distinct lines have no intersection. Coincident lines represent infinitely many solutions.

5. Applications

Define variables with units. A count equation and a cost equation constrain the same quantities.

A common error

Multiplying an equation by 2 requires multiplying every term on both sides.

Prerequisites: Solve one-variable equations and distribute factors

Version 1.0. Reviewed 2026-09-17. Selected skill coverage.

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