Graphing vs Substitution: Solving Linear Systems Two Ways

Original worked example / complete source key

Prompt: Solve the system y = 2x + 1 and x + y = 7 by graphing and by substitution. Compare results.

Answer: Substitution: replace y in x + y = 7 with 2x + 1 to get x + 2x + 1 = 7, so 3x = 6, x = 2. Then y = 2(2) + 1 = 5. The solution is (2, 5). Graphing: line y = 2x + 1 passes through (0, 1) and (2, 5); line x + y = 7 passes through (0, 7) and (7, 0). The lines intersect at (2, 5). Check: 5 = 2(2) + 1 and 2 + 5 = 7. Both methods agree.

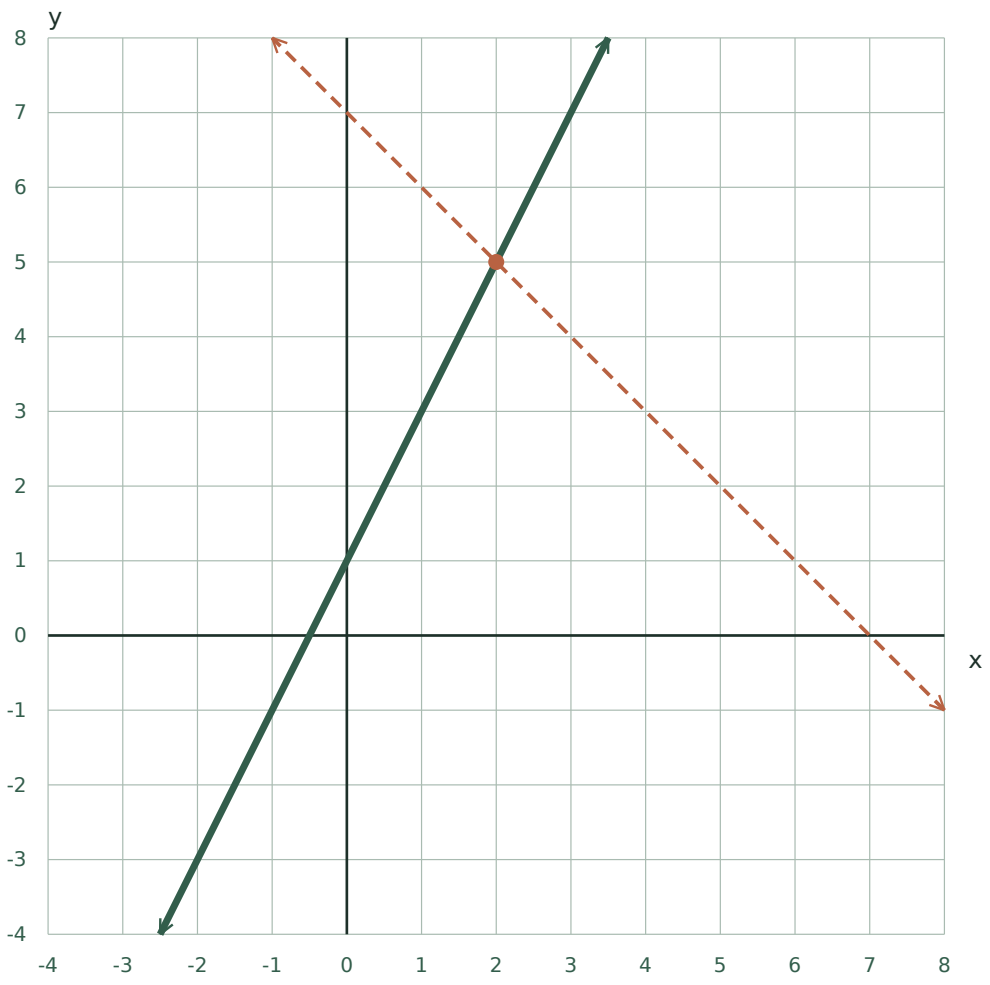
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Worked example / completed source graph

Solve the system y = 2x + 1 and x + y = 7 by graphing and by substitution. Compare results.

Line 1 (solid green): y = 2x + 1

Line 2 (long-dashed orange): x + y = 7



Common solution: (2, 5).

Marked point: (2, 5).

Horizontal interval = 1; vertical interval = 1. This is a display window, not a new domain.