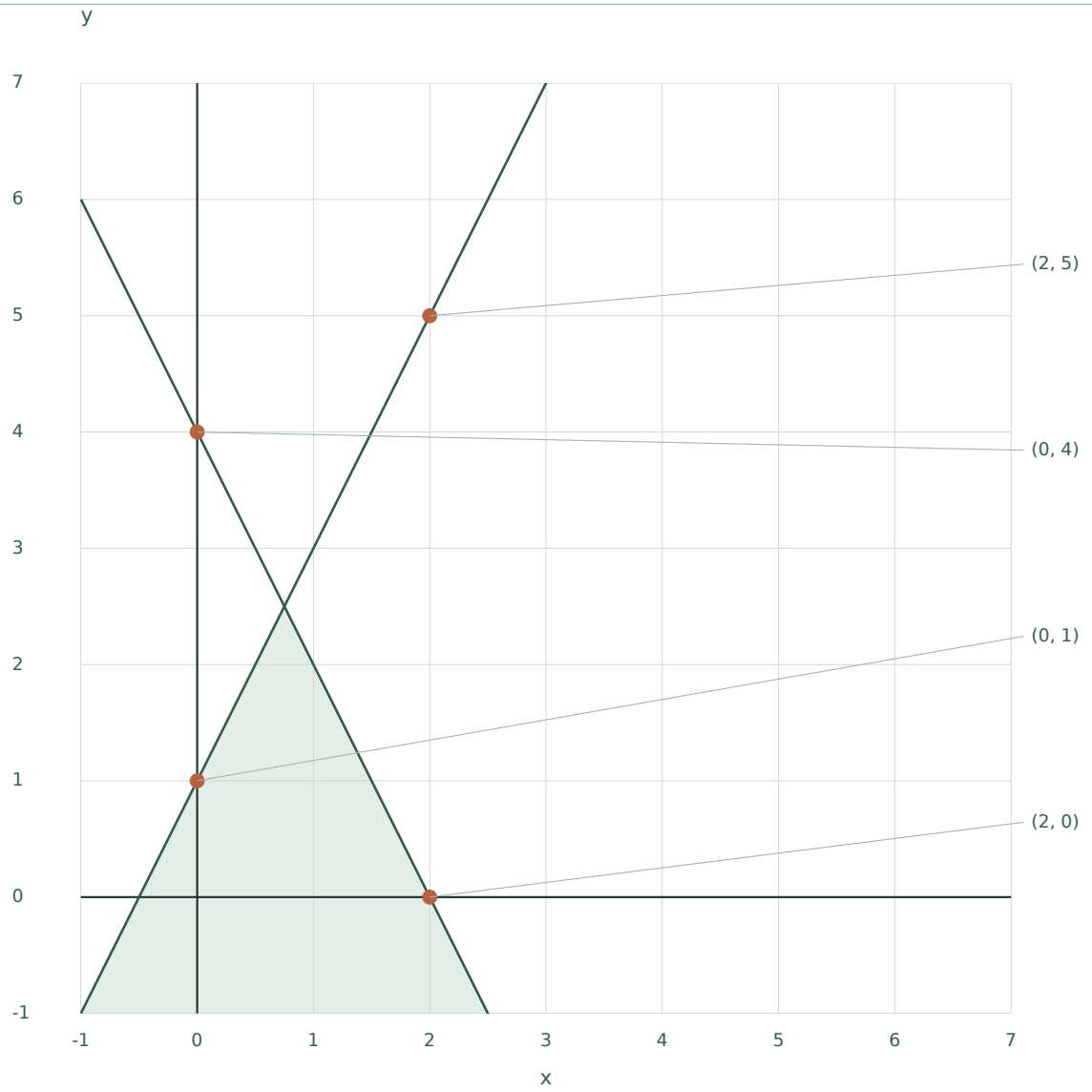
Writing Systems of Inequalities from Shaded Graphs: Reverse Reasoning Practice

Worked graph



The original complete written system and its checks accompany this graph. Marked points identify boundaries, not solution membership. Coordinate labels sit outside the plot; thin grey leaders are annotations, not function curves.

Writing Systems of Inequalities from Shaded Graphs: Reverse Reasoning Practice

Original worked example / unchanged complete key

Prompt: A graph shows two solid boundary lines. Line A passes through (0,1) and (2,5). Line B passes through (0,4) and (2,0). The shaded region is below Line A and below Line B. Write the system of inequalities.

Answer: $y \leq 2x + 1$ and $y \leq -2x + 4$

Reason: Line A slope is (5-1)/(2-0)=2, intercept 1, so y=2x+1. Solid and shaded below gives $y \leq 2x+1$. Test (0,0): $0 \leq 1$ is true. Line B slope is (0-4)/(2-0)=-2, intercept 4, so y=-2x+4. Solid and shaded below gives $y \leq -2x+4$. Test (0,0): $0 \leq 4$ is true. The system is $y \leq 2x+1$ and $y \leq -2x+4$.