Distance and Midpoint Formulas: Plot, Compute, Check

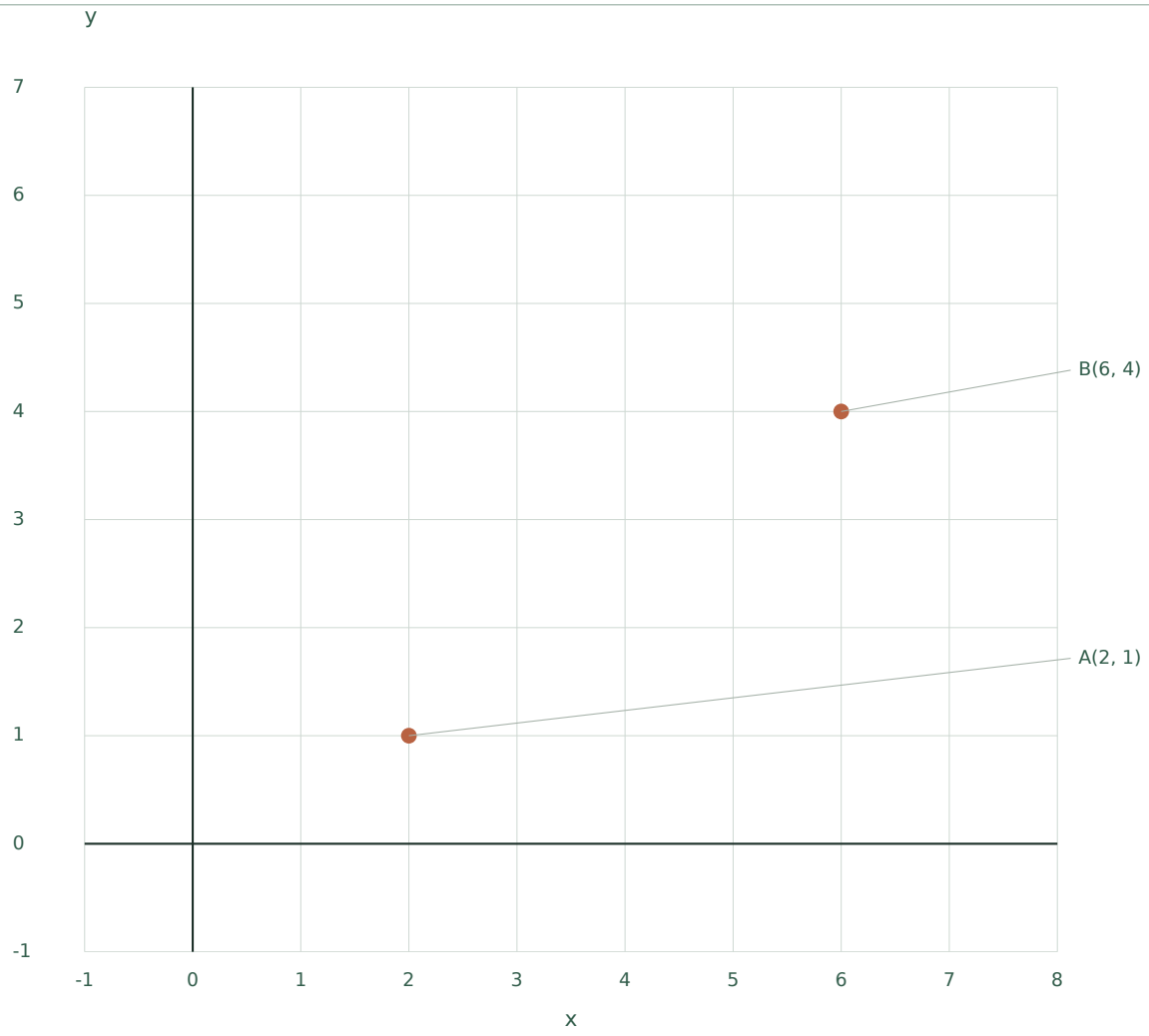
Original worked example / unchanged complete key

Prompt: Points A(2, 1) and B(6, 4) are plotted on a grid where each square is one unit. Find the distance AB and the midpoint M. Show a check.

Answer: Distance: differences are 6 - 2 = 4 and 4 - 1 = 3. Squares: 16 + 9 = 25. sqrt(25) = 5, so AB = 5 units. Midpoint: ((2 + 6)/2, (1 + 4)/2) = (4, 2.5). Check: from M(4, 2.5) to A(2, 1) the differences are 2 and 1.5; from M to B(6, 4) the differences are also 2 and 1.5, so M is halfway. The 3-4-5 pattern confirms the distance.

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Worked example: A(2,1) and B(6,4) plotted with segment



Given plot for the worked example; segment AB drawn, midpoint not shown. Coordinate labels sit outside the plot; thin grey leaders are annotations, not function curves.