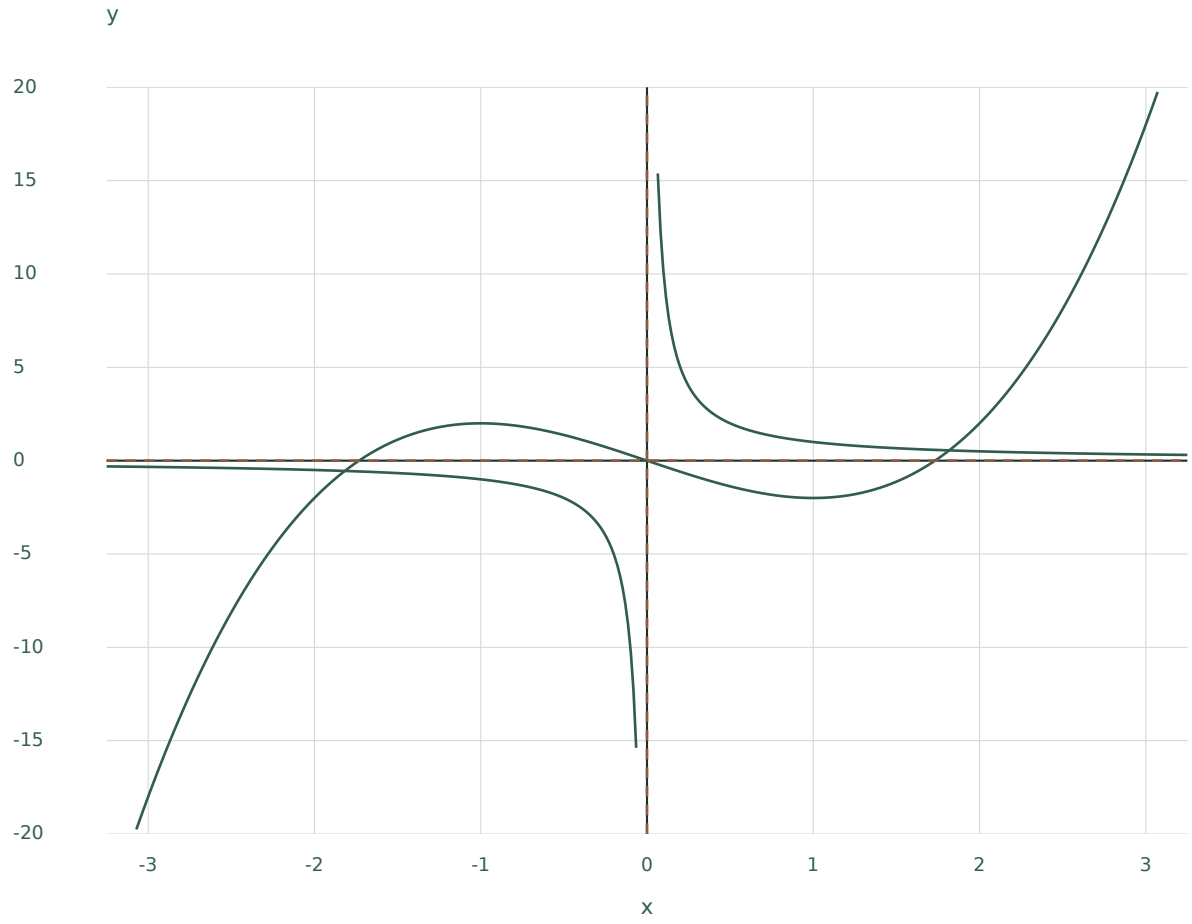
Compare Cubic and Reciprocal Graph Shapes: Paired Plotting Worksheet

Worked graph



Green paths are the cubic and the two reciprocal branches. Brown dashed axes mark reciprocal asymptotes; they are not part of either function.

Compare Cubic and Reciprocal Graph Shapes: Paired Plotting Worksheet

Original worked example / unchanged complete key

Prompt: Compare y = x^3 - 3x and y = 1/x on one grid using x-values -3, -2, -1, 0, 1, 2, 3 where defined. Identify turning points and asymptotes.

Answer: Cubic points: (-3,-18), (-2,-2), (-1,2), (0,0), (1,-2), (2,2), (3,18). Reciprocal points: (-3,-0.33), (-2,-0.5), (-1,-1), (1,1), (2,0.5), (3,0.33). The cubic is one continuous curve with turning points near x = -1 and x = 1. The reciprocal has two branches separated by the vertical asymptote x = 0 and approaches the horizontal asymptote y = 0. The cubic crosses the x-axis at approximately -1.73, 0, and 1.73; the reciprocal never crosses the x-axis.