Graphing Ellipses Worksheet: Center, Axes, and Foci

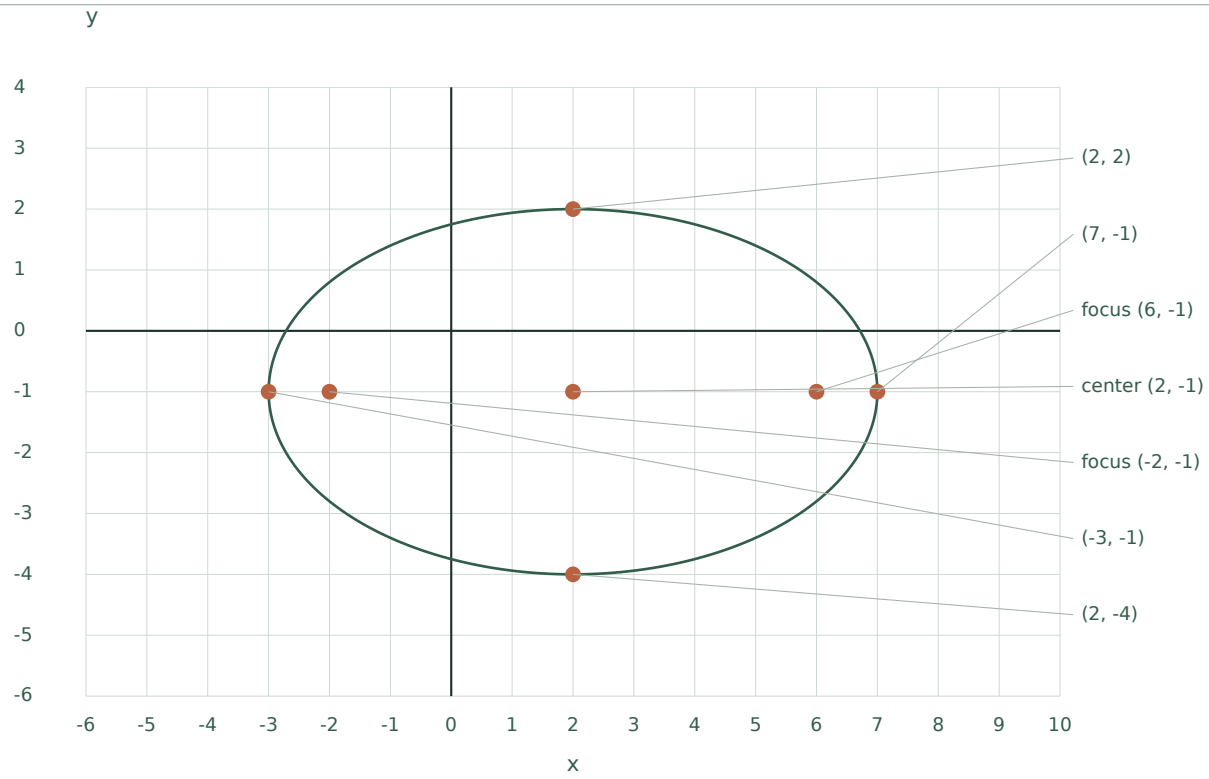
Original worked example / unchanged complete key

Prompt: Graph the ellipse $(x - 2)^2 / 25 + (y + 1)^2 / 9 = 1$. Identify the center, major and minor axes, vertices, co-vertices, and foci.

Answer: Center (2, -1). Larger denominator 25 is under x, so major axis is horizontal with a = 5 and length 10. Minor axis is vertical with b = 3 and length 6. Vertices: $(2 \pm 5, -1) = (7, -1)$ and $(-3, -1)$. Co-vertices: $(2, -1 \pm 3) = (2, 2)$ and $(2, -4)$. $c^2 = 25 - 9 = 16$, so c = 4. Foci: $(2 \pm 4, -1) = (6, -1)$ and $(-2, -1)$. Sketch a smooth closed curve through the four axis endpoints, symmetric about x = 2 and y = -1.

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Worked example: ellipse (x - 2)^2/25 + (y + 1)^2/9 = 1



Reference sketch of the worked example with center, vertices, co-vertices, and foci labeled. Coordinate labels sit outside the plot; thin grey leaders are annotations, not function curves.