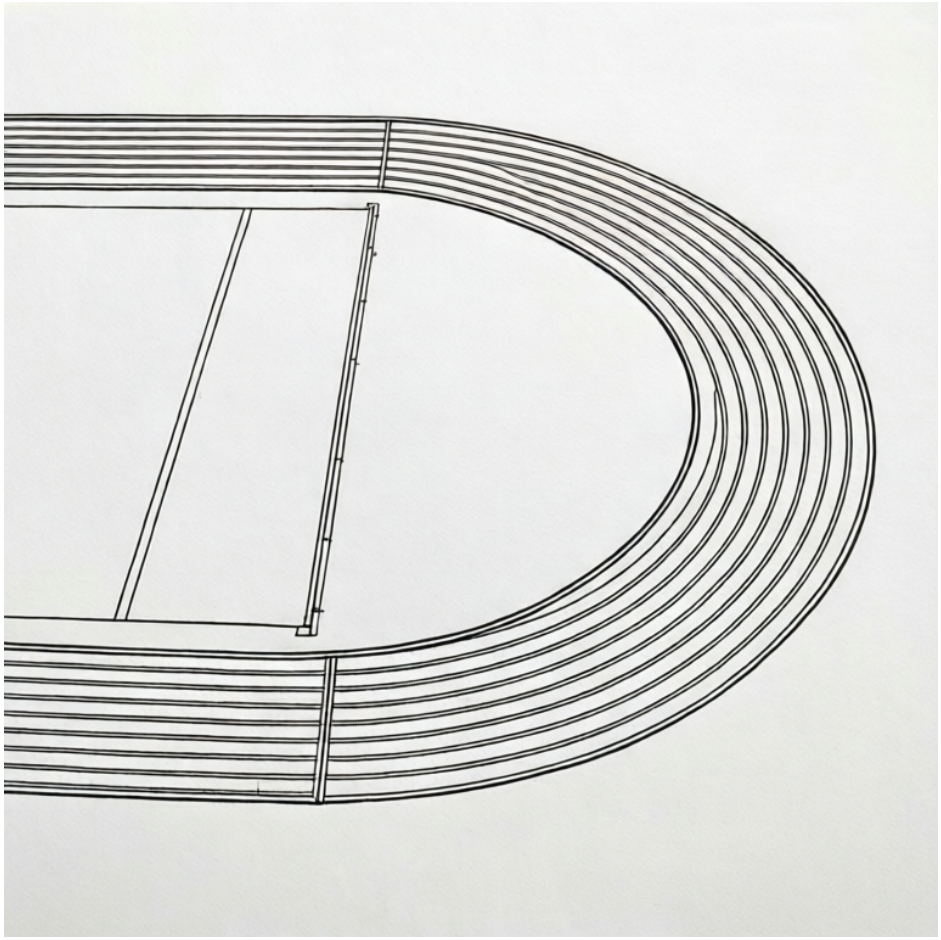
Draw a Running Track: Lane Lines and Curve Construction

Topic reference / ordinary illustration



Ordinary topic reference. Hypothetical dimensions in the four tasks are supplied in their own text; this illustration is not their measured answer.

Draw a Running Track: Lane Lines and Curve Construction

Worked example / complete source key

Draw a two-lane running track with an inner straight length of 8 cm, an inner semicircle radius of 3 cm, and a lane width of 1 cm. Use a top-down rounded rectangle convention.

Answer: The inner boundary is a rounded rectangle with two 8 cm straight segments and two semicircles of radius 3 cm. The first lane line is offset 1 cm outward: its straight segments are 8 cm long and its semicircle radius is 4 cm. The second lane line is offset another 1 cm: straight segments 8 cm and semicircle radius 5 cm. All semicircle centers lie on the same horizontal centerline, spaced so the straight segments connect tangentially. Lane spacing is 1 cm everywhere.

Reason: Offsetting the straight segments by the lane width keeps them parallel. Increasing the semicircle radius by the same lane width keeps the curves concentric and preserves constant spacing. The straight length does not change because the offset is perpendicular to the straights.

Check: Measure the distance between adjacent lane lines at two points on each straight and at the top and bottom of each curve. All should be 1 cm. Check that each straight meets its semicircle without a corner.