BuildMath

Find the Radius

One worked example, with the maths behind each result - follow it in the app and check it by hand.

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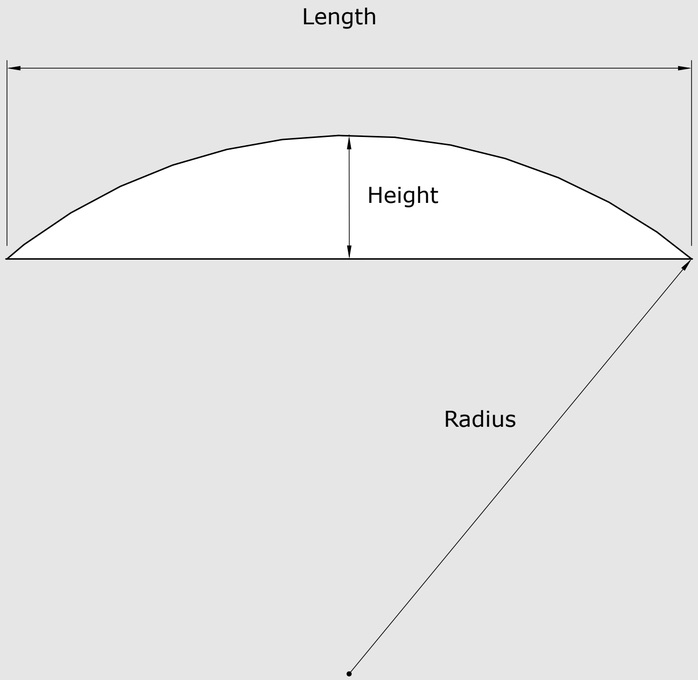
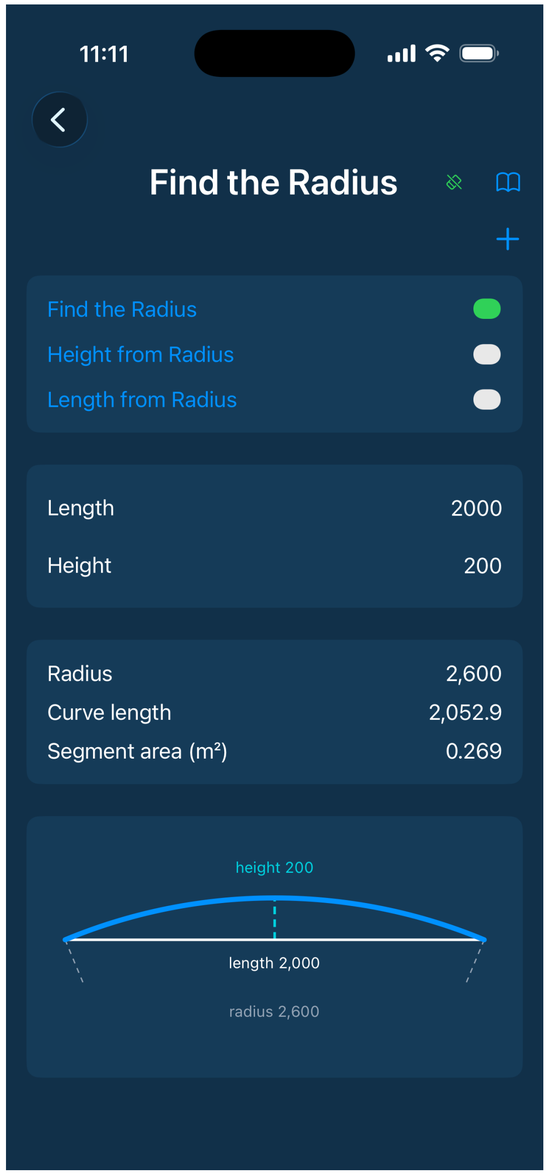


Find the Radius gives the radius of a curve from its length and height, and the length around it.

An arched opening is one use; curved heads, garden edges and bays work the same way.

Radius = (half length² + height²) ÷ (2 × height)

Inputs - Results



Choose Find the Radius
The other two modes, Height from Radius and Length from Radius, work the same curve backwards.

Enter the values
Length 2000 - straight across the ends of the curve.
Height 200 - from the middle of that line up to the curve.

The radius
Half the length, the radius and the radius less the height make a right-angled triangle, so:
$radius^2 = 1000^2 + (radius - 200)^2$
$radius = (1000^2 + 200^2) \div (2 \times 200) = 1{,}040{,}000 \div 400 = 2600$
The centre is 2600 – 200 = 2400 below the length line.

Curve length
Angle at the centre $= 2 \times \sin^{-1}(1000 \div 2600) = 45.24°$
Curve length $= 45.24 \div 360 \times 2 \times \pi \times 2600 = 2052.9$

Segment area
The pie slice from the centre, less the triangle under the length line:
$45.24 \div 360 \times \pi \times 2600^2 - 1000 \times 2400 \approx 268{,}800\ mm^2 = 0.269\ m^2$

Note:
The length can't be more than twice the radius - a curve is never wider than its circle.

Entering values and saving configs: see Build Math - the basics.