

Solutions

2.1 A tangent is perpendicular to the radius at contact.

2.2 Tangents from the same external point have equal length.

2.3 Apply the alternate segment theorem to the same chord.

3.1 False. In a unit circle, the horizontal diameter meets the chord from $(0,1)$ to $(1,0)$ at its endpoint $(1,0)$, not its midpoint $(1/2,1/2)$. A perpendicular from the centre bisects a chord.

Local review guidance: show the chosen method; give the checked result; explain the condition or failed shortcut. This is authored classroom guidance.