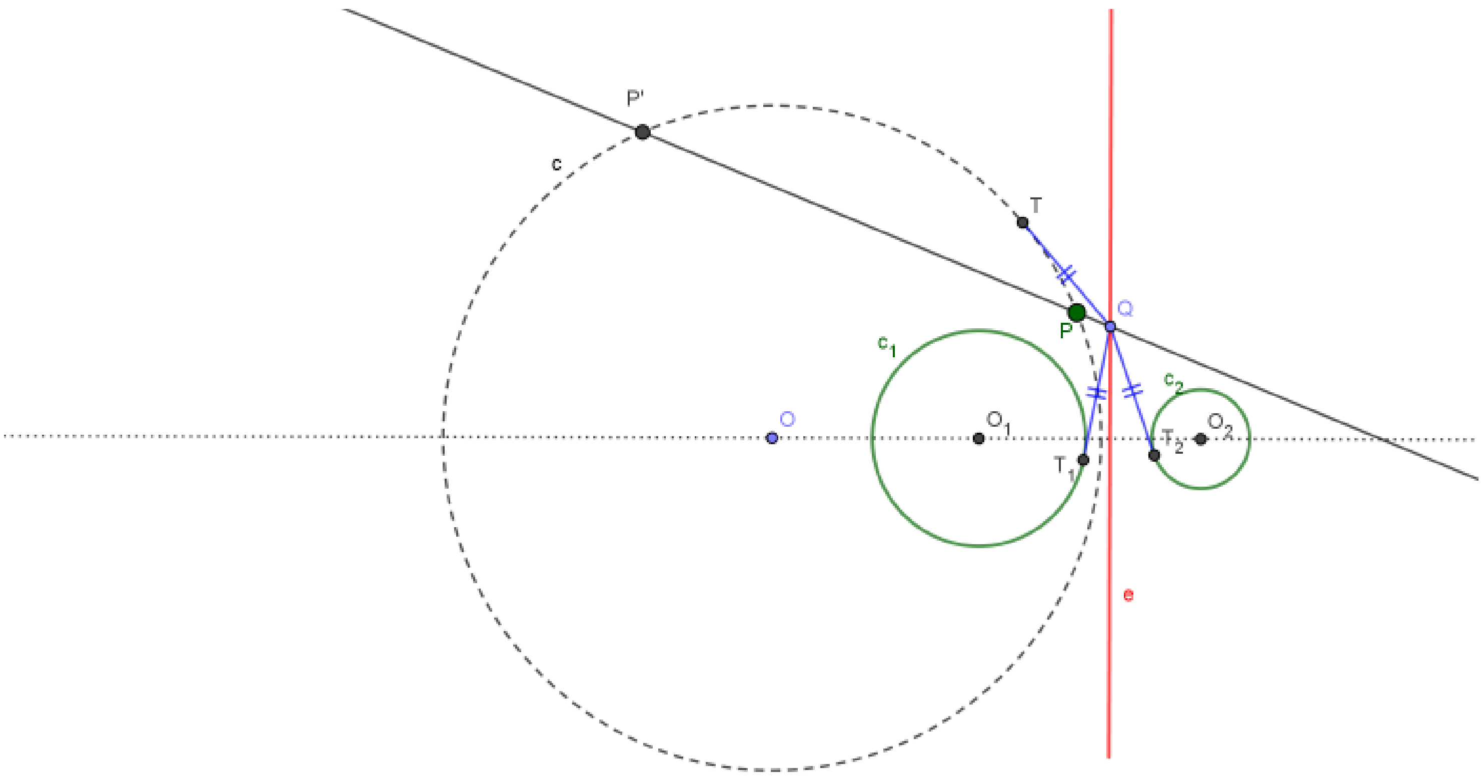

$Given\ two\ non-concentric\ circles\ c_1\ and\ c_2\ and\ a\ point\ P,\ neither\ on\ any\ of\ the\ given\ circles\ nor\ on\ their\ radical\ axis,\ there\ exists\ an\ unique\ circle\ through\ P\ and\ coaxial\ with\ the\ given\ circles.$

$Proof:$

$Assume\ c\ is\ the\ searched\ circle.\ Its\ center\ lies\ on\ the\ line\ joining\ the\ centers\ of\ c_1\ and\ c_2.$

$A\ second\ point\ P'\ on\ it\ is\ needed\ for\ determining\ c.$

$Let\ e\ be\ the\ common\ radical\ axis\ of\ c,\ c_1,\ c_2.$

$Take\ a\ point\ Q\ on\ e\ and\ draw\ the\ line\ QP\ cutting\ c\ again\ in\ P'.$

$Let\ QT_1,\ QT_2,\ QT\ be\ tangents\ from\ Q\ to\ c_1,\ c_2,\ c,\ respectively.$

$Then\ QT\ =\ QT_1\ =\ QT_2\ and\ QP \cdot QP'\ =\ QT^2$

$Therefore,\ it\ is\ enough\ to\ take\ QP'\ = QT_1^2/QP\ (signed\ distances)\ for\ determining\ P'.$

$César\ Lozada\ -\ Nov\ 25,\ 2023.$