Two methods for proving "Japanese Theorem II" using Maxima and KeTCindy: An Application of the MNR Method

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Many of the plane geometry problems that appear in Wasan (Japanese Mathematics) are beautiful to look at but difficult to solve using computer algebra. In particular, triangular problems involve simultaneous equations with irrational expressions, which are extremely difficult to solve using normal methods. The author therefore devised a method to express the quantities of a triangle using $m = \tan \frac{B}{2}, n = \tan \frac{C}{2}$ and the radius of the inscribed circle r, which he named the MNR method. The author developed the Maxima MNR library and confirmed that it can solve various problems. It is possible to solve even more problems with techniques using quarter angles $M = \tan \frac{B}{4}, N = \tan \frac{C}{4}$.