

ZMATH 2009f.00051

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Abel, the elliptic functions, and lemniscates. (Abel, de elliptiske funksjoner, og lemniskaten.)

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Summary: Abel discovered that if $p = 2^n + 1$ is a prime, a lemniscate can be divided into p parts of equal lengths, using ruler and compass. This result is explored from an elementary point of view, introducing the lemniscate, the integral expression for its arclength and from that its connection to elliptic functions, and concluding by considering the most elementary cases $p = 2, 3$ using explicit formulas for the doubling and tripling of arguments for elliptic functions.

Classification: A30 I80 G90

Keywords: elliptic functions; geometric constructions; constructions with rules and compasses; arclength of the lemniscate