

*Generation of a parabola by identical centrodes.*

Take Q at the focus.

the

$$p^3 = ar,$$

$$\frac{4p^4}{r^2} = 2ap$$

$$p^3 = ar^2.$$

This is the polar reciprocal of a cardioid with respect to its cusp.

*Generation of the lemniscate by identical centrodes.*

Take Q at the double point.

$$a^2p = r^3$$

$$a^2 \frac{2p^3}{r} = 8p^3$$

$$\frac{1}{4}a^2 = pr$$

This is an equilateral hyperbola.

*Generation of an equilateral hyperbola by identical centrodes.*

Take Q at the centre.

$$pr = a^2$$

$$\frac{4p^3}{r} = a^2$$

$$p^3 = \frac{1}{3}a^2r.$$

This is the polar reciprocal of the lemniscate.

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### Trigonometrical Mnemonics.

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