

$$i'(x) = \frac{1}{a} (x^2 - 4) + x$$

Scheitel: $y = \frac{1}{a} (x^2 - 4) + x$

$$a \cdot y = x^2 - 4 + ax$$

$$\frac{a^2}{4} + ay + 4 = x^2 + ax + \left(\frac{a}{2}\right)^2$$

$$ay + \frac{a^2}{4} + 4 = \left(x + \frac{a}{2}\right)^2$$

$$y + \left(\frac{a}{4} + \frac{4}{a}\right) = \frac{1}{a} \left(x + \frac{a}{2}\right)^2$$

$$S \left(-\frac{a}{2} \mid -\left(\frac{a}{4} + \frac{4}{a}\right) \right)$$

Länge der Strecke Ursprung Scheitel

$$\left(-\frac{a}{2}\right)^2 + \left(-\frac{a}{4} - \frac{4}{a}\right)^2 = l^2$$

$$\frac{a^2}{4} + \frac{a^2}{16} + \frac{16}{a^2} + 2 = l^2$$

$$2 + 16 \cdot a^{-2} + \frac{5}{16} a^2 = l^2 = L(a)$$

$$L'(a) = +16 \cdot (-2) \cdot a^{-3} + \frac{5}{16} \cdot 2a$$

$$= -32 \frac{1}{a^3} + \frac{5}{8} a$$

$$-32 \frac{1}{a^3} + \frac{5}{8} a = 0$$



$$a \neq 0$$

$$-32 + \frac{5}{8} a^4 = 0$$

$$\frac{5}{8} a^4 = 32$$

$$a^4 = \frac{256}{5}$$

$$a_1 = \sqrt[4]{\frac{256}{5}}$$

$$a_2 = -\sqrt[4]{\frac{256}{5}}$$

$$\approx 2,67$$

$$\approx -2,67$$

$$\frac{a}{4} + \frac{4}{a} = \mathcal{L}(a)$$