

Lsg. zu 4-9

$$\begin{aligned}f_1(x) &= (3x+2)(2x-2) \\ &= 3\left(x+\frac{2}{3}\right)(x-1) \cdot 2 \\ &= 6 \cdot \left(x+\frac{2}{3}\right)(x-1) \quad \text{LF}\end{aligned}$$

x_s ergibt sich aus dem Mittelwert der Nullstellen:

$$x_s = \frac{x_{01} + x_{02}}{2} = \frac{-\frac{2}{3} + 1}{2} = \frac{1}{6}$$

$$\begin{aligned}y_s &= f_1\left(\frac{1}{6}\right) = \left(3 \cdot \frac{1}{6} + 2\right) \left(2 \cdot \frac{1}{6} - 2\right) \\ &= \frac{15}{6} \cdot \left(-\frac{10}{6}\right) = -\frac{150}{36} = -\frac{25}{6}\end{aligned}$$

$$\text{also: } f_1(x) = 6 \cdot \left(x - \frac{1}{6}\right)^2 - \frac{25}{6} \quad \text{SF}$$

$$(3x+2) \cdot (2x-2) = 6x^2 - 6x + 4x - 4$$

$$f_1(x) = 6x^2 - 2x - 4 \quad \text{NF}$$

$$\begin{aligned}f_2(x) &= \left(\frac{1}{2}x - 2\right)^2 = \left(\frac{1}{2}x - 2\right) \cdot \left(\frac{1}{2}x - 2\right) \\ &= \frac{1}{2}(x-4) \cdot \frac{1}{2}(x-4) = \frac{1}{4} \cdot (x-4)(x-4)\end{aligned}$$

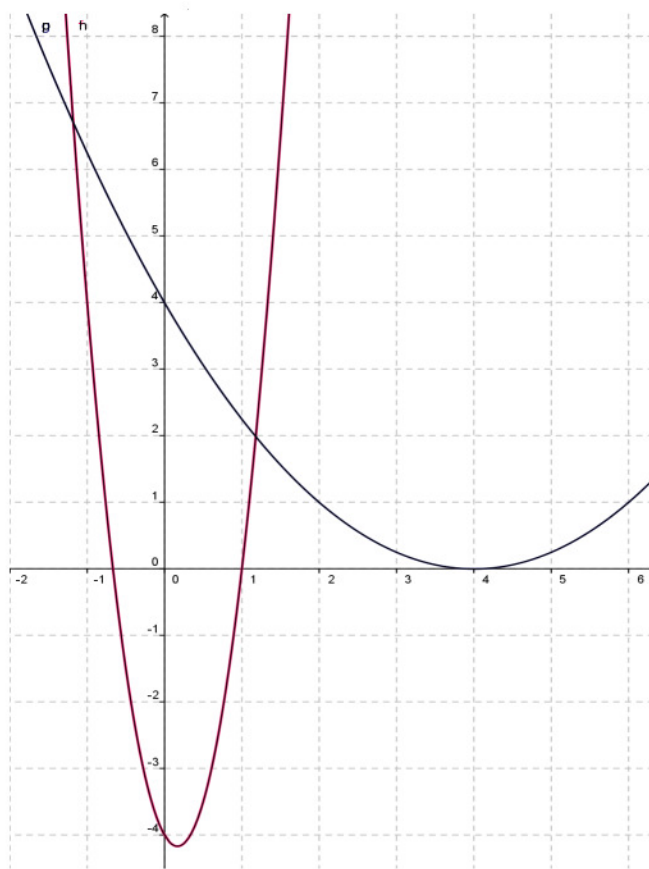
LF

Doppelte Nullstelle ist gleich

$$\text{Scheitelpunkt: } f_2(x) = \frac{1}{4}(x-4)^2 \quad \text{SF}$$

ausmultipliziert:

$$\begin{aligned}f_2(x) &= \frac{1}{4}(x^2 - 8x + 16) \\ &= \frac{1}{4}x^2 - 2x + 4 \quad \text{NF}\end{aligned}$$



Bestimmung d. Schnittpkt.:

$$f_1(x) = f_2(x)$$

$$6x^2 - 2x - 4 = \frac{1}{4}x^2 - 2x + 4 \quad | -f_2(x)$$

$$\frac{23}{4}x^2 - 8 = 0 \quad | +8$$

$$\frac{23}{4}x^2 = 8 \quad | \cdot \frac{4}{23}$$

$$x^2 = \frac{32}{23} \quad | \sqrt{\dots}$$

$$x = \pm \sqrt{\frac{32}{23}} = \pm 1,39$$

$$f_2\left(+\sqrt{\frac{32}{23}}\right) = \frac{1}{4} \cdot \frac{32}{23} - 2 \cdot \sqrt{\frac{32}{23}} + 4$$

$$= 1,99 \approx S_1(1,39/1,99)$$

$$f_2\left(-\sqrt{\frac{32}{23}}\right) = 6,71 \approx S_2(-1,39/6,71)$$