

24.9.25

S.57 A 2a)

$$p = -6; q = 8$$

$$x_{1/2} = -\frac{-6}{2} \pm \sqrt{\frac{(-6)^2}{4} - 8}$$

$$x_{1/2} = 3 \pm \sqrt{1}$$

$$\underline{x_1 = 4}; \underline{x_2 = 2}$$

A 2b)

$$p = -4,5; q = 2$$

$$x_{1/2} = -\frac{-4,5}{2} \pm \sqrt{\frac{(-4,5)^2}{4} - 2}$$

$$x_{1/2} = 2,25 \pm \sqrt{3,0625}$$

$$\underline{x_1 = 4}; \underline{x_2 = 0,5}$$

p-q-Formel:

$$x_1 = -\frac{p}{2} + \sqrt{\frac{p^2}{4} - q}$$

$$x_2 = -\frac{p}{2} - \sqrt{\frac{p^2}{4} - q}$$

lemon!

S.57 A 3a)

$$-2x^2 + 8x - 6 = 0 \quad | :(-2)$$

$$x^2 - 4x + 3 = 0$$

$$p = -4; q = 3$$

$$x_{1/2} = -\frac{-4}{2} \pm \sqrt{\frac{(-4)^2}{4} - 3}$$

$$x_{1/2} = 2 \pm \sqrt{1}$$

$$\underline{x_1 = 3}; \underline{x_2 = 1}$$

A 3b)

$$5x^2 - 35x + 20 = 0 \quad | :5$$

$$x^2 - 7x + 4 = 0$$

$$p = -7; q = +4$$

$$x_{1/2} = -\frac{-7}{2} \pm \sqrt{\frac{(-7)^2}{4} - 4}$$

$$x_{1/2} = 3,5 \pm \sqrt{8,25}$$

$$\underline{x_1 \approx 6,37}; \underline{x_2 \approx 0,63}$$

A4a) $6x^2 - 11x + 6 = 0 \quad | :6$

$$x^2 - \frac{11}{6}x + 1 = 0$$

$$p = -\frac{11}{6}; \quad q = 1$$

$$x_{1/2} = -\frac{-\frac{11}{6}}{2} \pm \sqrt{\left(\frac{-\frac{11}{6}}{2}\right)^2 - 1}$$

$$x_{1/2} \approx \frac{11}{12} \pm \sqrt{-0,16} \quad \text{↯}$$

keine Lösung

A4f) $-2x^2 - 4x - 4 = 0 \quad | :(-2)$

$$x^2 + 2x + 2 = 0$$

$$p = 2; \quad q = 2$$

$$x_{1/2} = -\frac{2}{2} \pm \sqrt{\frac{2^2}{4} - 2}$$

$$x_{1/2} = -1 \pm \sqrt{-1} \quad \text{↯}$$

keine Lösung

A7a) $4x^2 = 16x - 12 \quad | -16x + 12$

$$4x^2 - 16x + 12 = 0 \quad | :4$$

$$x^2 - 4x + 3 = 0$$

$$p = -4; \quad q = 3$$

$$x_{1/2} = -\frac{-4}{2} \pm \sqrt{\frac{(-4)^2}{4} - 3}$$

$$x_{1/2} = 2 \pm \sqrt{1} \quad \underline{x_1 = 3}; \underline{x_2 = 1}$$

A7e)

$$x^2 + \frac{1}{20} = \frac{3}{5}x \quad | -\frac{3}{5}x$$

$$x^2 - \frac{3}{5}x + \frac{1}{20} = 0$$

$$p = -\frac{3}{5}; \quad q = \frac{1}{20}$$

$$x_{1/2} = -\frac{-\frac{3}{5}}{2} \pm \sqrt{\left(\frac{-\frac{3}{5}}{2}\right)^2 - \frac{1}{20}}$$

$$x_{1/2} = 0,3 \pm \sqrt{0,04}$$

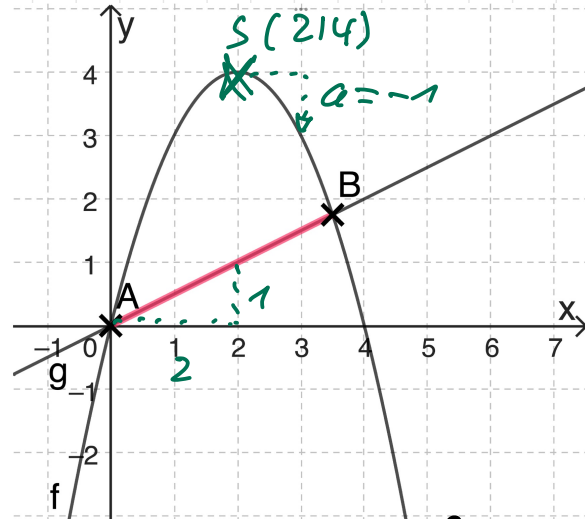
$$\underline{x_1 = 0,5}; \quad \underline{x_2 = 0,1}$$

Bestimme die
Länge der Strecke
 $\overline{AB}$.

① Funktionsgleichungen
ermitteln

② Schnittpunkte
berechnen um
Koordinaten von B
zu ermitteln

③ Abstand der
Punkte A und B
berechnen



$$f(x) = -(x-2)^2 + 4$$

$$g(x) = \frac{1}{2} x$$

Schnittpunkte - gleichsetzen

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

$$-[x^2 - 4x + 4] + 4 = \frac{1}{2} x$$

$$-x^2 + 4x - 4 + 4 = \frac{1}{2} x \quad | +x^2$$

$$0 = x^2 - 4x - \frac{1}{2} x$$

Schrittunkte - gleichsetzen

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

$$-[x^2 - 4x + 4] + 4 = \frac{1}{2}x$$

$$-x^2 + 4x - 4 + 4 = \frac{1}{2}x \quad | +x^2$$

$$0 = x^2 - 4x + \frac{1}{2}x$$

$$0 = x^2 - 3,5x$$

$$0 = x(x - 3,5) \quad \text{Nullprodukt}$$

$$x = 0 \quad \text{oder} \quad x - 3,5 = 0$$

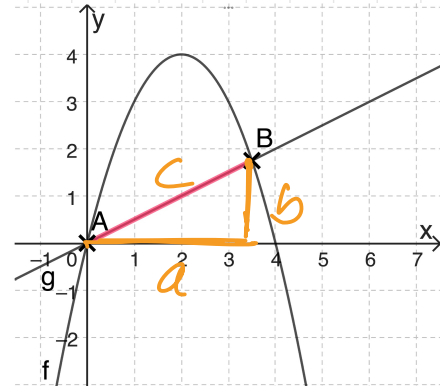
$$x = 3,5$$

y-Werte : x einsetzen in g(x)

$$g(0) = 0 \quad g(3,5) = 0,5 \cdot 3,5 = 1,75$$

$$A(0|0)$$

$$B(3,5|1,75)$$



$$f(x) = -(x-2)^2 + 4$$

$$g(x) = 0,5x$$

Abstand

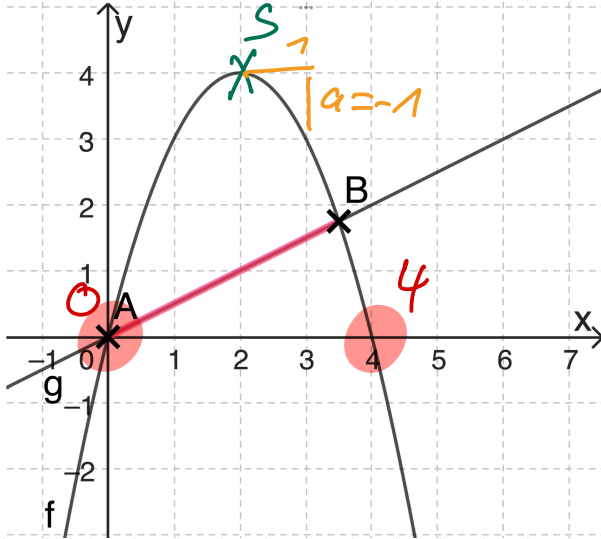
Satz des Pythagoras

$$c^2 = a^2 + b^2$$

$$c = \sqrt{a^2 + b^2}$$

$$c = \sqrt{3,5^2 + 1,75^2}$$

$$\approx \underline{\underline{3,91}}$$



faktorisierte Form

Nullstellen 0 und 4

$$\begin{aligned} 0 &= -x^2 + 4x \\ 0 &= x(-x + 4) \\ x &= 0 \text{ oder } -x + 4 = 0 \\ &\quad x = 4 \end{aligned}$$

$$f(x) = a(x-n) \cdot (x-m) \Rightarrow f(x) = -x \cdot (x-4)$$

$$f(x) = -x^2 + 4x$$

in Scheitelpunktfarm

$$-x^2 + 4x$$

$$= -[x^2 - 4x]$$

$$= -[x^2 - 4x + 4 - 4]$$

$\hookrightarrow: 2 \cdot 2 = 4$

$$= -[(x-2)^2 - 4]$$

$$= -(x-2)^2 + 4$$

$$S(2|4) \quad a = -1$$

$$-(x-0)(x-4)$$

$$4(x-3) \cdot x = 0 \quad | :4$$

$$\frac{\cancel{4} \cdot (x-3) \cdot x}{\cancel{4}} = \frac{0}{4} \quad 0$$

S. 46 A10 Textaufgabe

Rest ist HA