

Basieren eines Funktionsgraphen

Funktion

$$f(x,y) = x^2 - 2xy + 2y$$

Definitionsbereich

$$\{(x,y) \mid 0 \leq x \leq 3, 0 \leq y \leq 2\}$$

empfohlene Größe

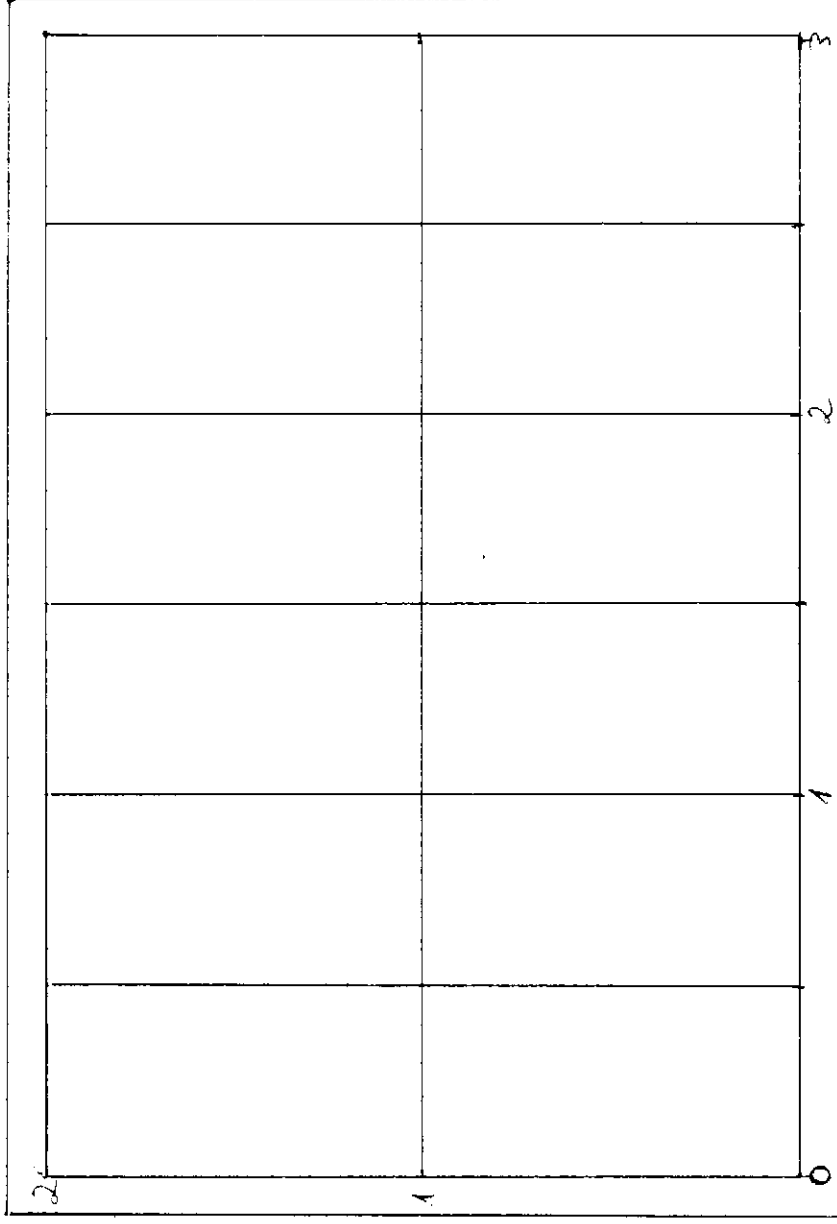
x- und y- Richtung

10 cm $\hat{=}$ 1 Längeneinheit

z- Richtung

2 cm $\hat{=}$ 1 Längeneinheit

y



"Bodenplatte" Maßstab 1:2

32 cm \times 22 cm

(inkl. 1 cm breite Umrandung)

Schnittfunktionen

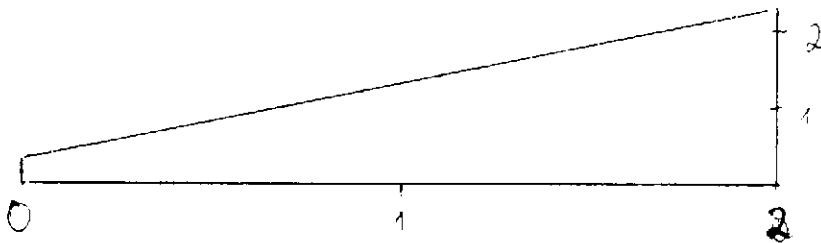
$$f(0, y) = 0^2 - 2 \cdot 0 \cdot y + 2y = 2y$$

$$x=0$$



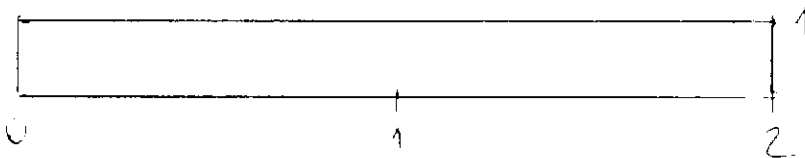
$$f\left(\frac{1}{2}, y\right) = \left(\frac{1}{2}\right)^2 - 2 \cdot \frac{1}{2} \cdot y + 2y = \frac{1}{4} + y$$

$$x = \frac{1}{2}$$



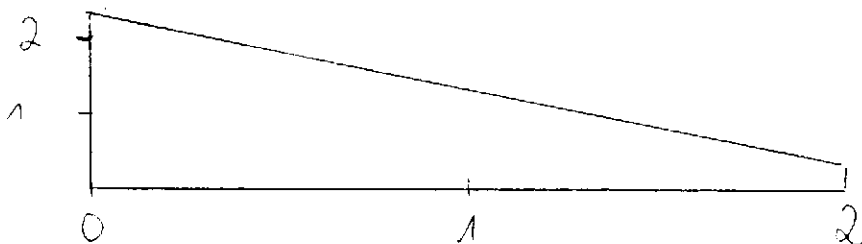
$$f(1, y) = 1^2 - 2 \cdot 1 \cdot y + 2y = 1$$

$$x=1$$



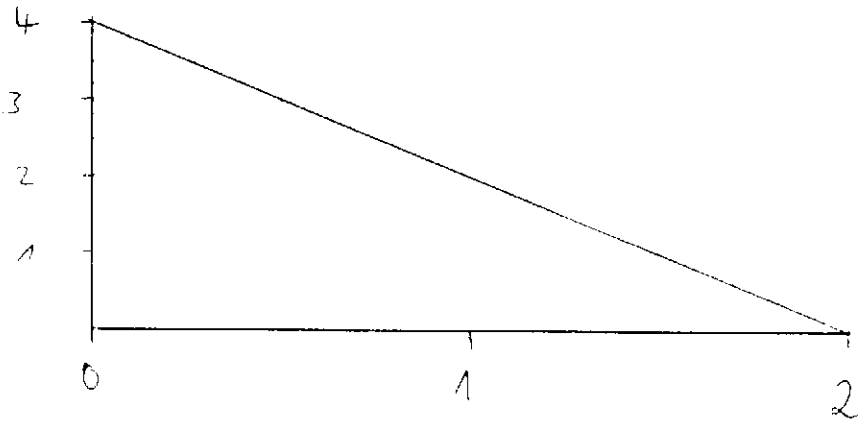
$$f\left(\frac{3}{2}, y\right) = \left(\frac{3}{2}\right)^2 - 2 \cdot \frac{3}{2} \cdot y + 2y = \frac{9}{4} - y$$

$$x = \frac{3}{2}$$



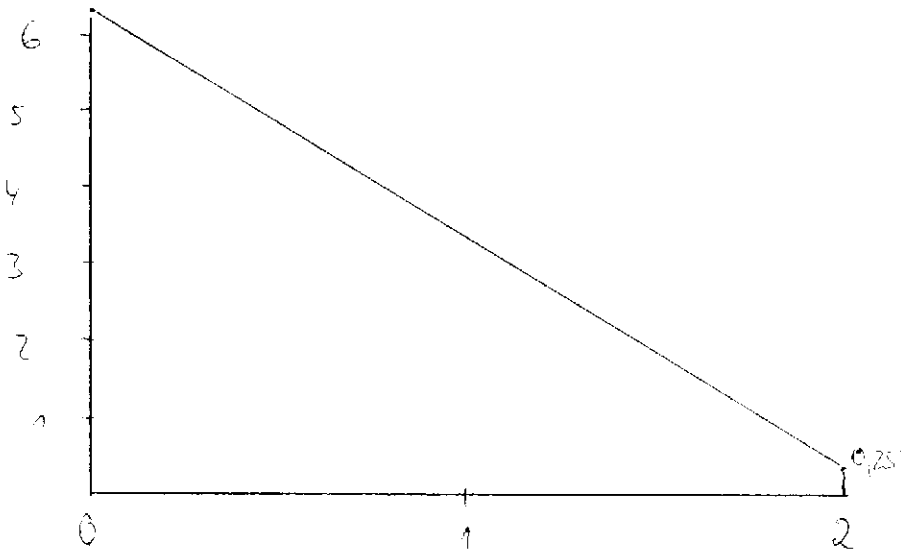
$$f(2, y) = 2^2 - 2 \cdot 2 \cdot y + 2y = 4 - 2y$$

$$x=2$$



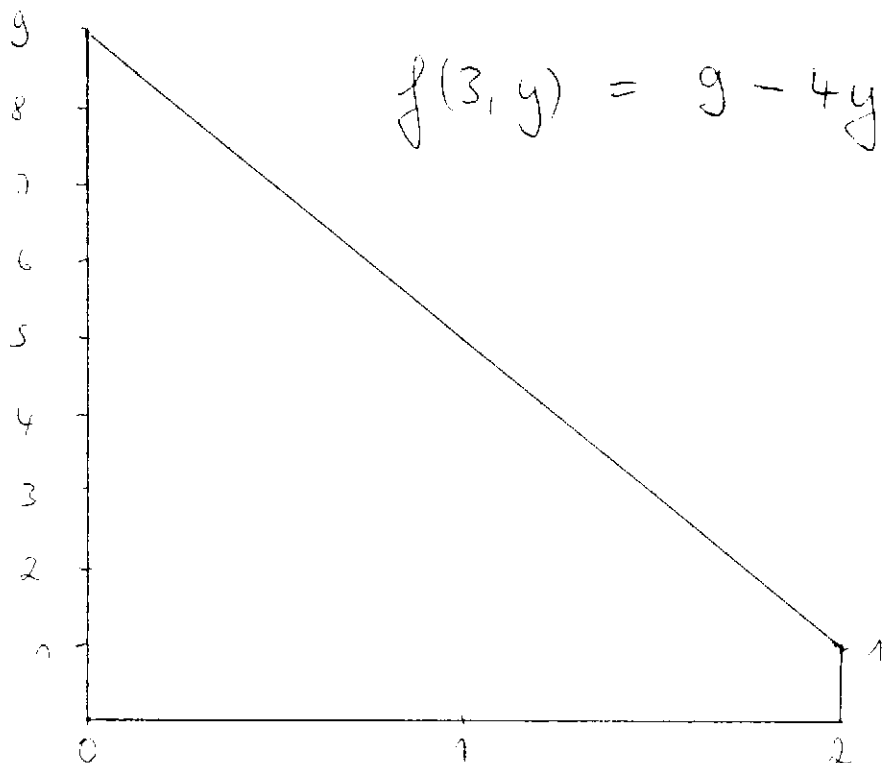
$$f\left(\frac{5}{2}, y\right) = \left(\frac{5}{2}\right)^2 - 2 \cdot \frac{5}{2} y + 2y = \frac{25}{4} - 3y$$

$$x = \frac{5}{2}$$



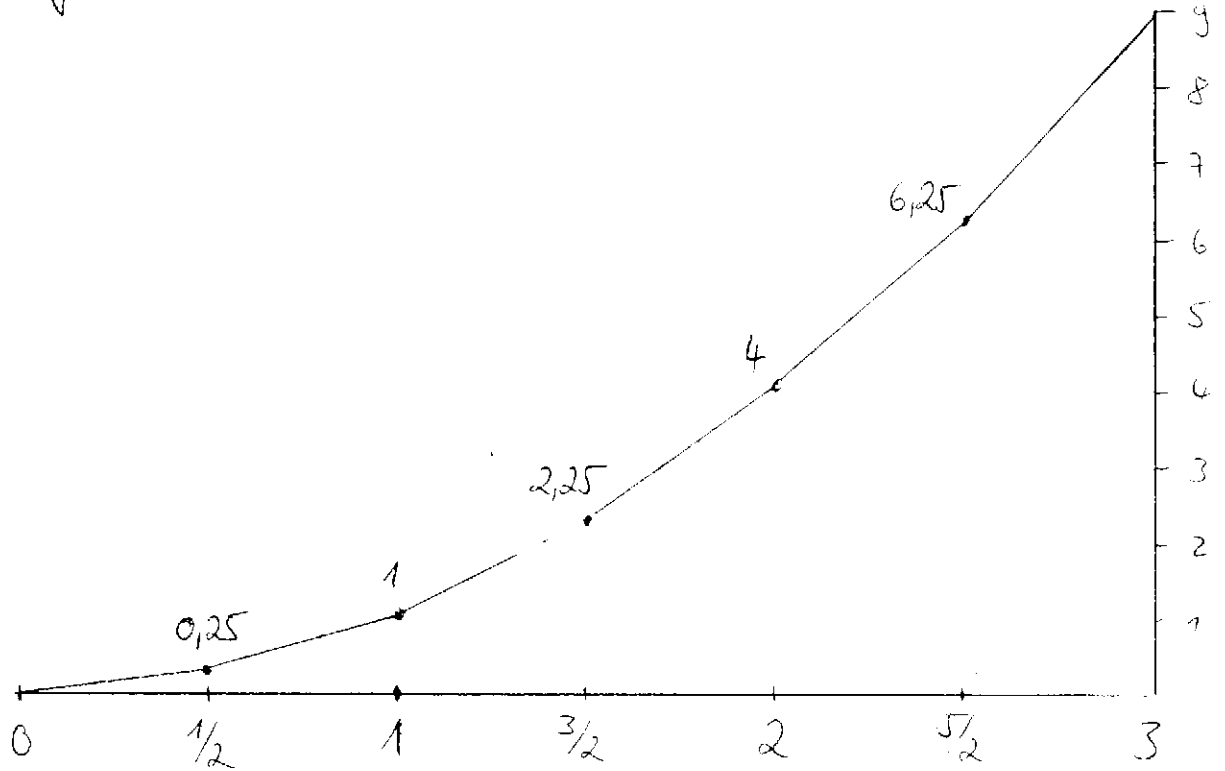
$$f(3, y) = 9 - 4y$$

$$x=3$$



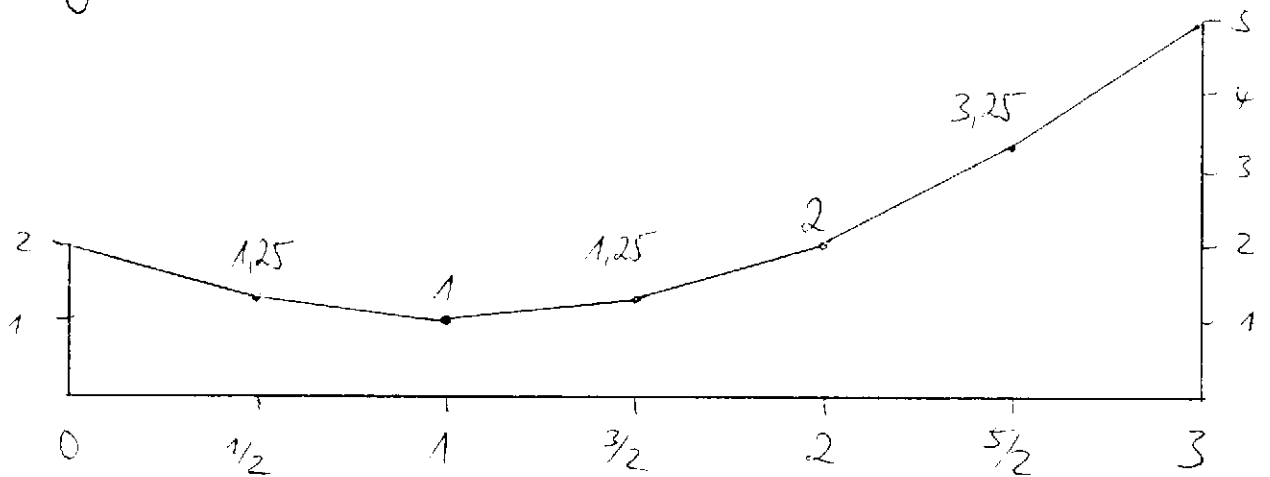
$$f(x, 0) = x^2 - 2 \cdot x \cdot 0 + 2 \cdot 0 = x^2$$

$y=0$



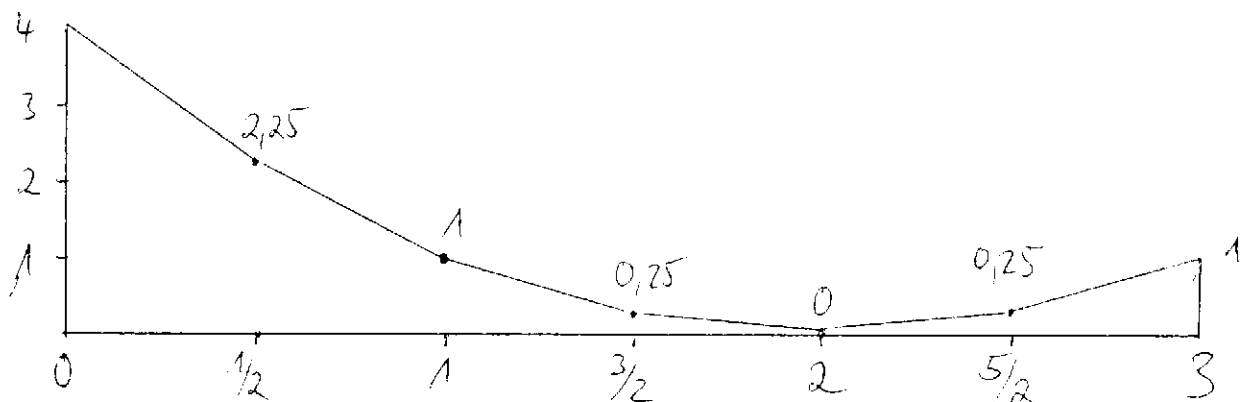
$$f(x, 1) = x^2 - 2 \cdot x \cdot 1 + 2 \cdot 1 = (x-1)^2 + 1$$

$y=1$



$$f(x, 2) = x^2 - 2 \cdot x \cdot 2 + 2 \cdot 2 = (x-2)^2$$

$y=2$



Aufteilung auf Bastelkarton

x-Schnitte
(s. Vergrößerung unten)

