

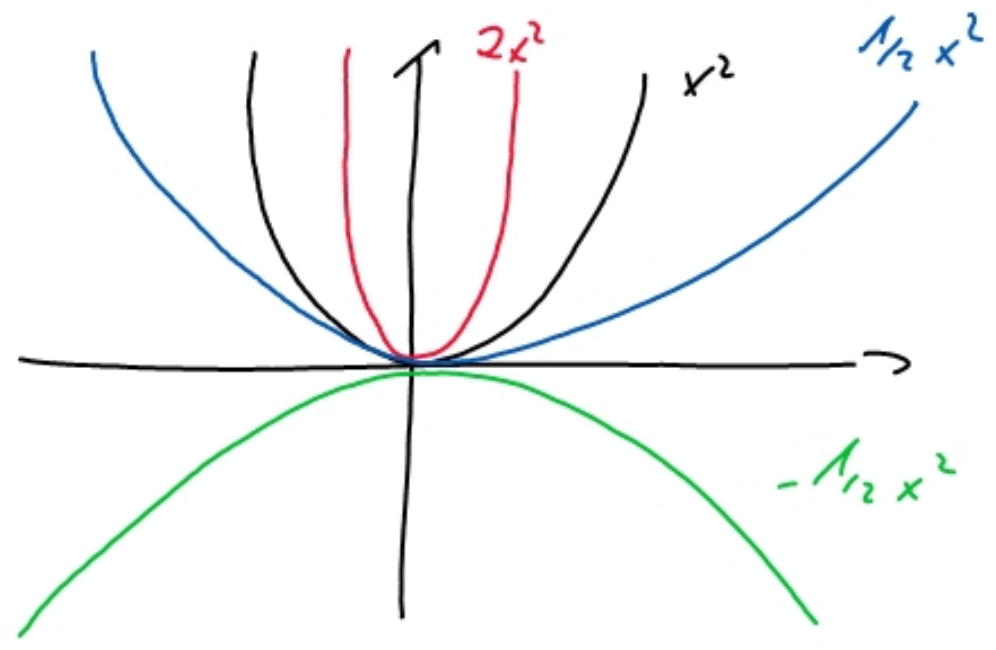
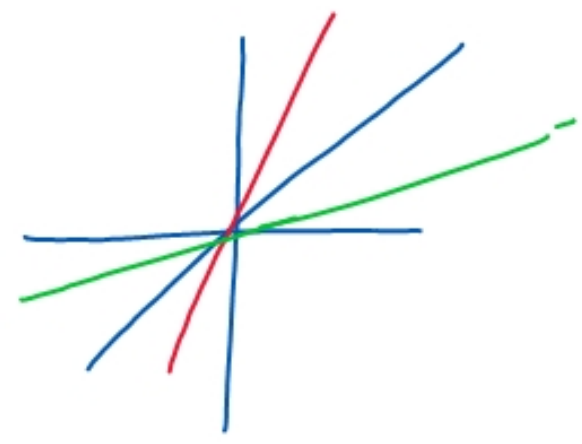
$f_a(x) = a \cdot x^2$

Parameter  $\swarrow$   
 Variable  $\searrow$

$a > 0 \Rightarrow \cup$   
 $a < 0 \Rightarrow \cap$   
 $|a| < 1 \Rightarrow$  gestreckt  
 $|a| > 1 \Rightarrow$  gestraucht

Funktionschar

$f_x(a) = a \cdot x^2$



$\int a \cdot x^2 dx$   
 $da$

S.96

a, b, c, i, 1, 3, 5

$$a) (2x - 0,1y)^2 = 4x^2 - 0,4xy + 0,01y^2$$

$$b) (ax + 3y)^2 = a^2x^2 + 6axy + 9y^2$$

$$c) (2x - 0,5xy)(2x + 0,5xy) = 4x^2 - 0,25x^2y^2$$

$$i) (14x - 0,2x)(14x + 0,2x) = 196 - 0,04x^2$$

$$1) 3 \cdot \left(\frac{1}{3}x + 2y\right) \left(\frac{1}{3}x - 2y\right) - 4 \cdot \left(\frac{2}{y}x + 3y\right)^2$$

$$3 \left(\frac{1}{9}x^2 - 4y^2\right) - 4 \cdot \left(\frac{4}{y^2}x^2 + 12x + 9y^2\right)$$

$$\frac{1}{3}x^2 - 12y^2 - \frac{16x^2}{y^2} - 48x - 36y^2 \Rightarrow -47y^2$$

$$3) \quad \frac{3\sqrt{x} + 2}{1 + \sqrt{3x}} \cdot \frac{1 - \sqrt{3x}}{1 - \sqrt{3x}} = \frac{3\sqrt{x} - 3\sqrt{3x^2} + 2 - 2\sqrt{3x}}{1 - 3x}$$

$$4) \quad \frac{\sqrt{x} - 2\sqrt{1-x}}{2\sqrt{3x} - 4} \cdot \frac{2\sqrt{3x} + 4}{2\sqrt{3x} + 4} = \frac{2\sqrt{3x^2} + 4\sqrt{x} - 4\sqrt{3x - 3x^2} - 8\sqrt{1-x}}{4 \cdot 3x - 16}$$

$$f(x) = 1 + \frac{1}{2-x} \quad ; \quad \mathbb{D} = \mathbb{R} - \{2\} \quad \frac{K}{\infty} = 0$$

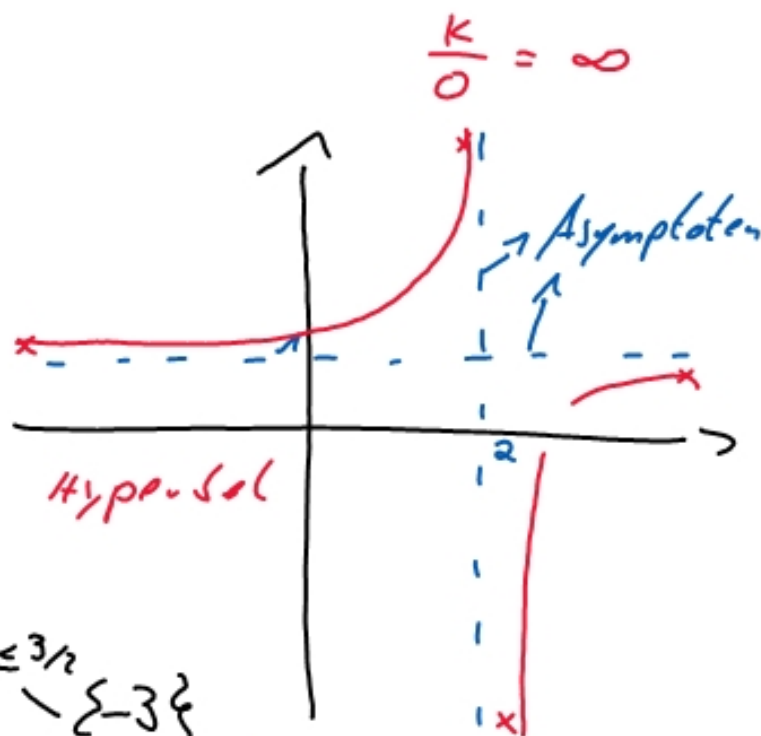
$$\lim_{x \rightarrow \infty} f(x) = 1 + \frac{1}{-\infty} = 1^-$$

$$\lim_{x \rightarrow -\infty} f(x) = 1 + \frac{1}{\infty} = 1^+$$

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

$$\lim_{x \rightarrow 2^-} f(x) = 1 + \frac{1}{0^+} = \infty$$

$$\lim_{x \rightarrow 2^+} f(x) = 1 + \frac{1}{0^-} = -\infty$$



$$5) \lim_{x \rightarrow -3} \frac{2x+6}{6-2\sqrt{3-2x}} = \frac{0}{0} \quad \mathbb{D} = \mathbb{R}^{\leq 3/2} \setminus \{-3\}$$

(x+3)

$\geq 0$ :

$$\frac{\text{NR.}}{\text{NR.}} \frac{2(x+3)}{6-2\sqrt{3-2x}} = \frac{6+2\sqrt{3-2x}}{6+2\sqrt{3-2x}} = \frac{2 \cdot (x+3) \cdot [6+2\sqrt{3-2x}]}{36-4 \cdot (3-2x)}$$

$$\lim_{x \rightarrow -3} \left( \frac{6+2\sqrt{3-2x}}{4} \right) = 3$$
$$\frac{36-12+8x}{8 \cdot (x+3)}$$

/4

$$(x+2)^4$$

$$(x+2)^2(x+2)^2$$



$$1x^4 2^0 + 4x^3 2^1 + 6x^2 2^2 + 4x^1 2^3 + 1x^0 2^4$$

$$x^4 + 8x^3 + 24x^2 + 32x + 16$$

$$\left(\frac{1}{2}x - 2y\right)^4$$

$$1\left(\frac{1}{2}x\right)^4(-2y)^0 + 4\left(\frac{1}{2}x\right)^3(-2y)^1 + 6\left(\frac{1}{2}x\right)^2(-2y)^2 + 4\left(\frac{1}{2}x\right)^1(-2y)^3 + 1\left(\frac{1}{2}x\right)^0(-2y)^4$$

$$\frac{1}{16}x^4 - x^3y + 6x^2y^2 - 16xy^3 + 16y^4$$

$$(2i - 1/2)^5$$

$$1(2i)^5 + 5(2i)^4(-1/2)^1 + 10(2i)^3(-1/2)^2 + 10(2i)^2(-1/2)^3 + 5(2i)^1(-1/2)^4 + 1(-1/2)^5$$

$$32i - 40 - 20i + 5 + 5/8i - 1/32$$

$$-35/32 + 12 5/8i$$

$$\text{A-f} \Rightarrow + \pi$$

