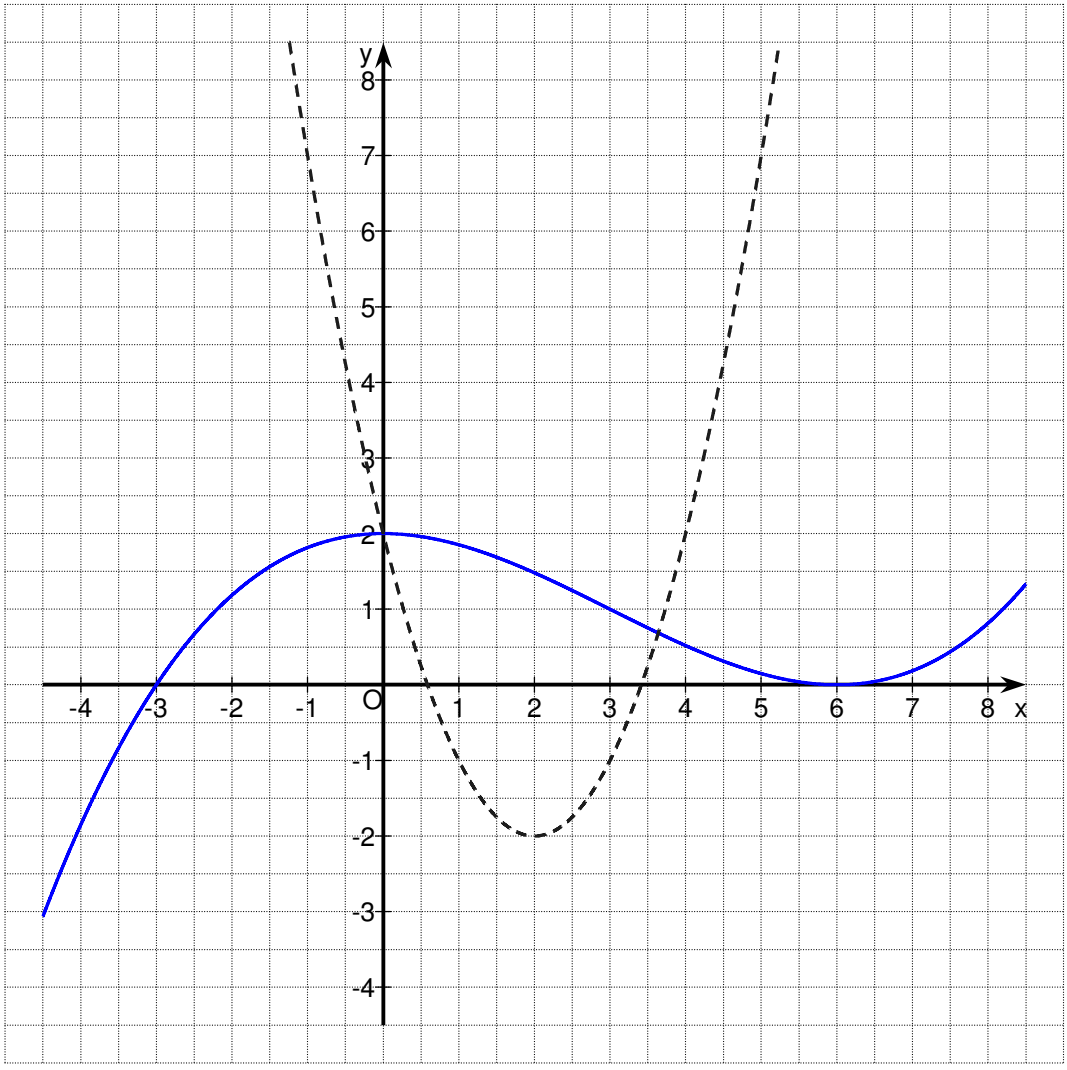
Klasse BVKT1
2. Schulaufgabe aus der Mathematik
am 24.02.2014

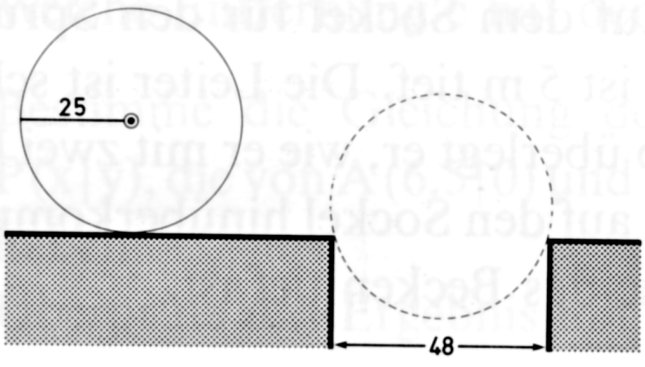
Name: .....

1.1	1.2	1.3	1.4	1.5	1.6	1.7	2	3	Σ

Zu 1.4.2



Aufgabe 2



BVKT1 2. Schulaufgabe am 24.02.2014

1.1 $p_k(x) = k(x^2-4x+2^2-4)+2 = k(x-2)^2-4k+2$

$S(2|2-4k)$ wandert n. unten ($y_S \to -\infty$); $x_S = 2$: fest

1.2 $f_1(x) = f_0(x) \Rightarrow x^2-4x+2 = 2 \Leftrightarrow x^2-4x = 0 \Leftrightarrow x(x-4)=0$

$x_1 = 0$: Pkt auf y-Achse; $p_0(0) = 2 \Rightarrow P_1(0|2)$; $P_2(4|2)$

1.3 $kx^2-4kx+2 = -2x+1 \Leftrightarrow kx^2+(2-4k)x+1 = 0$

$D = (2-4k)^2-4\cdot k\cdot 1 = 4-16k+16k^2-4k = 16k^2-20k+4=0$

$k_{1/2} = \frac{1}{2\cdot 16}(20 \pm \sqrt{20^2-4\cdot 16\cdot 4}) = \frac{1}{32}(20\pm 12)$; $k_1 = 1$; $k_2 = \frac{1}{4}$

Für $k=1$: $1\cdot x^2+(2-4)x+1=0 \Leftrightarrow x^2-2x+1=0 \Leftrightarrow (x-1)^2=0$

$x_1 = 1$ in g: $g(1) = -2+1 = -1 \Rightarrow B(1|-1)$

1.4.1 $\frac{1}{54}(x^3-9x^2+0x+108) : (x-6) = \frac{1}{54}(x^2-3x-18)$

$-(x^3-6x^2)$

$-3x^2$

$-(-3x^2+18x)$

$-18x+108$

$-(-18x+108)$

0

$= \frac{1}{54}(x-6)(x+3)$

$f(x) = \frac{1}{54}(x-6)^2(x+3)$

$x_1 = 6$; $x_2 = -3$

1.4.2 G_f und G_p

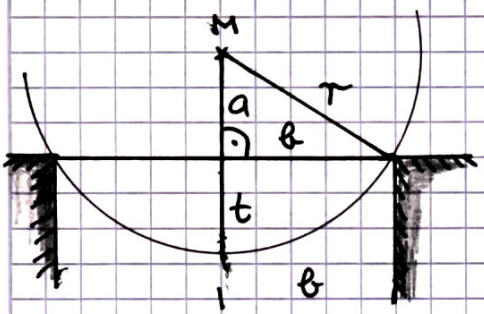
1.4.3 $\frac{1}{54}(x^3-9x^2+108) = x^2-4x+2 \quad |\cdot 54$

$\Leftrightarrow x^3-9x^2+108 = 54x^2-216x+108 \Leftrightarrow x^3-63x^2+216x = 0$

$\Leftrightarrow x(x^2-63x+216)=0$; $x_1 = 0$; $x_{2/3} = \frac{1}{2}(63 \pm \sqrt{63^2-4\cdot 216})$

$x_2 = \frac{1}{2}(63+3\sqrt{345})$ ($\approx 59{,}36$); $x_3 = \frac{1}{2}(63-3\sqrt{345})$ ($\approx 3{,}6$)

2



$a^2+b^2 = r^2 \Leftrightarrow a = \sqrt{r^2-b^2}$

$t = r-a = r-\sqrt{r^2-b^2}$

$t = 25-\sqrt{25^2-24^2}$

$t = 18$

3 $\frac{x+e}{b} = \frac{e}{a} \Leftrightarrow x+e = \frac{e}{a}\cdot b \Leftrightarrow x = \frac{e}{a}\cdot b - e$

$x = \frac{18}{15}\cdot 25 - 18 \Leftrightarrow x = 12$