13. Klassen 1. Schulaufgabe Analysis 2008/09

1. $D_{fmax} = R\backslash\{-2\}$; Nullstellen: $4 - 4x^2=0$ $x^2=1$ $x_{1/2} = \pm 1$;

$x_3 = -2$ ist Unendlichkeitsstelle (Pol) (2.Ordnung)

2. $f(x) = -4 + \frac{16x+20}{(x+2)^2} = \frac{-4(x+2)^2+16x+20}{(x+2)^2} = \frac{-4(x^2+4x+4)+16x+20}{(x+2)^2} = \frac{-4x^2+4}{(x+2)^2}$

oder Polynomdivision

$x \to -2 \Rightarrow f(x) \to -\infty$ da $\left(\frac{Z \to -12}{N \to 0_+}\right)$ Asymptoten: $x=-2$ $y=\frac{-4}{1}=-4$

3. $f'(x) = \frac{(x+2)^2(-8x)-(4-4x^2)2(x+2)1}{(x+2)^4} = \frac{(x+2)(-8x)-(4-4x^2)2}{(x+2)^3} =$

Kürzen

$\frac{-8x^2-16x-8+8x^2}{(x+2)^3} = \frac{-16x-8}{(x+2)^3}$ f ' (x) = 0 $-16x-8=0$ $x_4=-0,5$ $y_4=f(-0,5)=-\frac{4}{3}$

Nachweis: Umgebungsuntersuchung

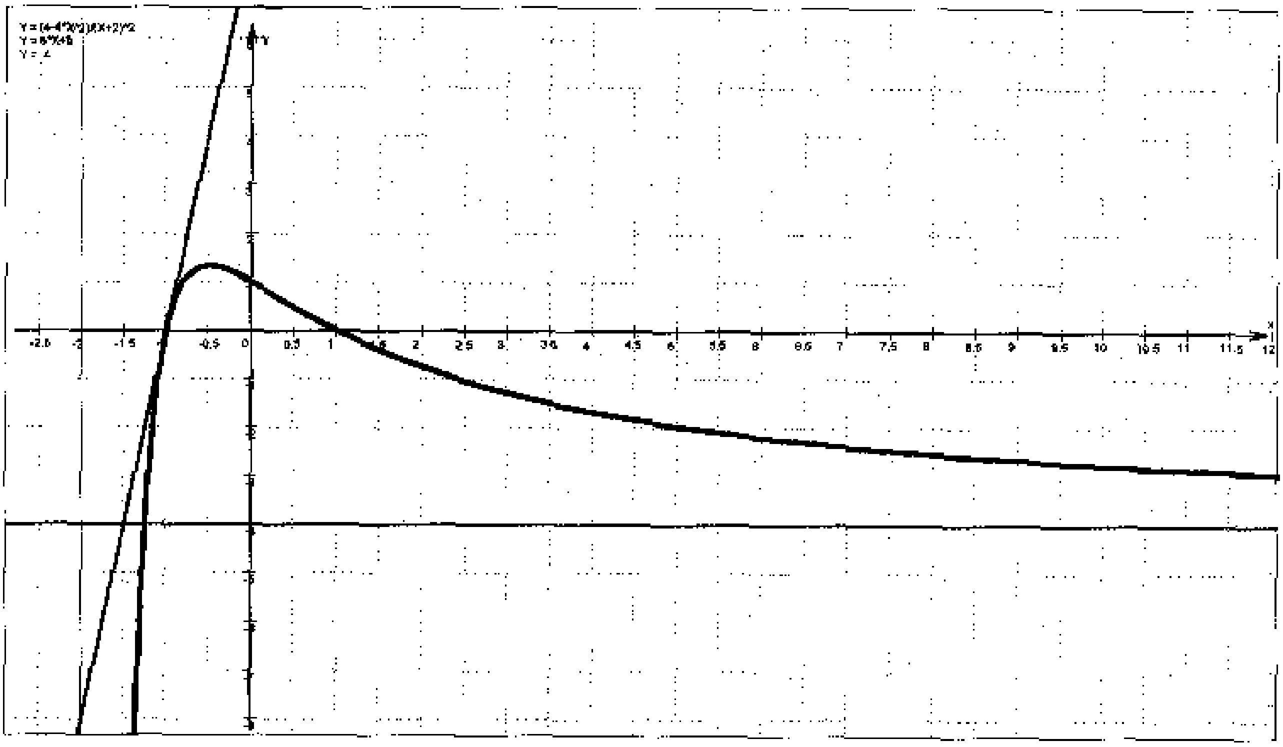
	−2	<x<	−0,5	<x
$f'(x) = -\frac{-16x-8}{(x+2)^3}$	n.d.	+	0	−
G_f		steigt	HOP.	fällt

HOP(-0,5|4/3)

4. y = mx + t m=f ' (-1) =8 (-1|0) einsetzen : 0=−8+t t=8 y=8x+8

5. Rest $r(x)=16x+20=0$ $16x=-20$ $x=-1,25$ $y=-4$ $S(-1,25|-4)$

6. f(10)=−2,75



7. $g(x) = \frac{x(4-4x^2)}{x(x+2)^2}$