Lösung der Übungsaufgabe Mathe Klasse 13b 16. 01. 2009

Martin Wellmann

Lösung zu e)

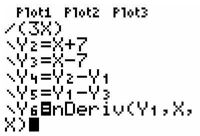
$f(x)=\frac{-3x^2+8x-4}{3x};x\neq 0;x\in R$ Das Schaubild sei K.

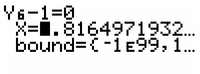
Quadratseite mit Anstieg 1 berührt K $\Rightarrow f'(x)=-1+\frac{4}{3}x^{-2}=1$

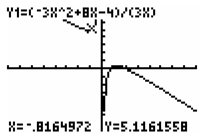
$$\frac{4}{3}x^{-2}=2$$

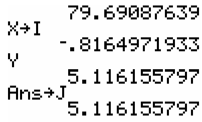
$$x^2=\frac{2}{3}\Rightarrow x=-\sqrt{\frac{2}{3}}=-0{,}816...$$

Oder mit GTR, falls man die Ableitung nicht ausrechnen will:



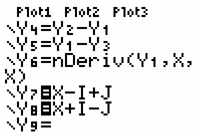


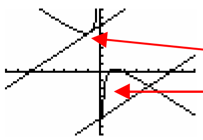




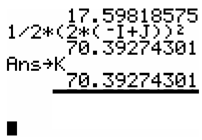
$\frac{y-J}{x-I}=1\Rightarrow y=x-I+J$

Die Gerade, die K berührt, ist g_7: y = x – I + J = x + 5,93265..., die dazu parallele Gerade, die K schneidet, ist g_8: y = x + I – J = x - 5,93265...



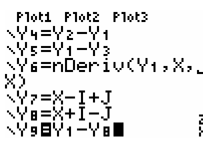


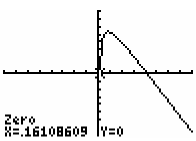
Man erkennt selbst im GTR hier die Berührung und hier die zu berechnende Fläche

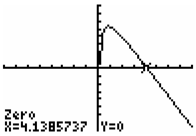


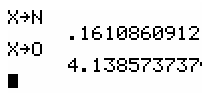
Die Fläche des Quadrates beträgt 70,39... FE → K

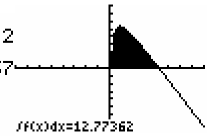
Die abzuziehende Fläche wird nun berechnet. → A_3 = 12,77... FE → P

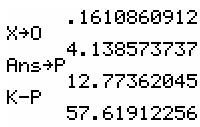












Die Gesuchte Fläche hat also einen Inhalt von 57,619... FE.