HA S. 297 / 5

geg.: $D = 100 \frac{N}{m}$ (Federkonstante Schraubenfeder)

$s = 5\,cm$

ges.: W (mechan. Arbeit)

Los $W = \int_0^{0{,}05\,m} F(s)\,ds = \int_0^{0{,}05\,m} D s\,ds$

$W = D\left[\frac{1}{2} s^2\right]_0^{0{,}05\,m} = 100 \frac{N}{m}\left(\frac{1}{2} \cdot 0{,}05^2\,m^2 - 0\right)$

$\underline{W = 0{,}125\,Nm\ (J)}$

HA S. 238 / 7

a) $f(x) = \frac{1}{2}x + \frac{2}{x^2}$; $c = 2$; A nach rechts

Asympt.: $\underline{y = \frac{1}{2}x}$

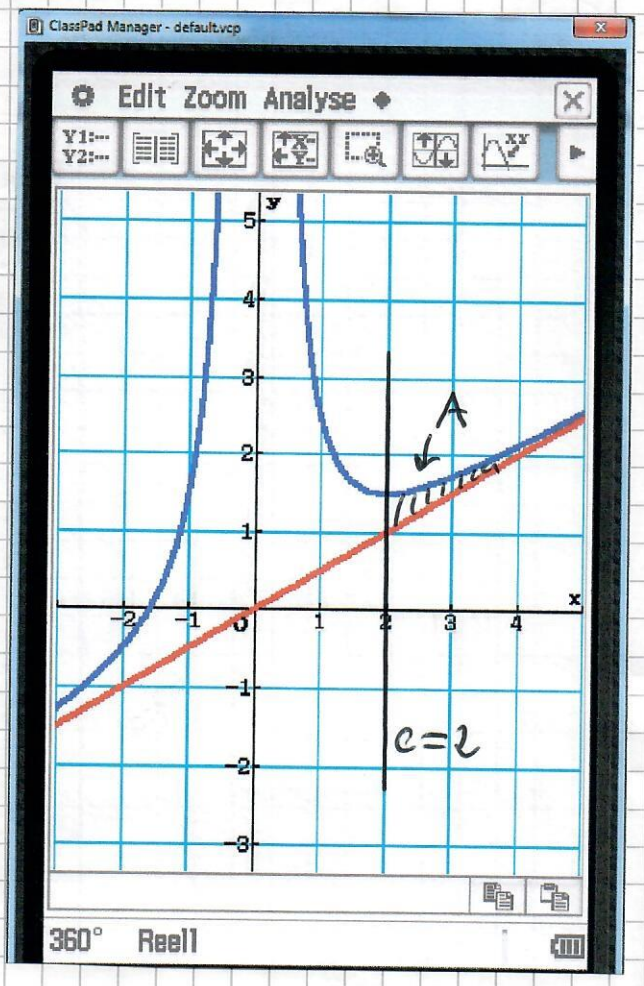
Los: $+\infty$

$A = \int_2 \frac{1}{2}x + \frac{2}{x^2} - \frac{1}{2}x\,dx$

$\Rightarrow A = \int_2^c \frac{2}{x^2}\,dx = 2\int_2^c \frac{1}{x^2}\,dx$

$A = 2\left[-\frac{1}{x}\right]_2^c = 2\left(-\frac{1}{c} + \frac{1}{2}\right)$

$\Rightarrow \lim_{c \to +\infty} 2\left(-\frac{1}{c} + \frac{1}{2}\right) = \underline{1\ FE}$



HA S. 29817

b) $f(x) = -\frac{1}{3}x + e^x$; $c = 1$; A nach links

Asympt.: $y = -\frac{1}{3}x$

Lös.:

$$A = \int_{-\infty}^{1} -\frac{1}{3}x + e^x + \frac{1}{3}x \, dx$$

$$\curvearrowright A = \int_{c}^{1} e^x \, dx$$

$$A = \left[e^x \right]_c^1 = e - e^c$$

$$\curvearrowright \lim_{c \to -\infty} e - e^c = \underline{\underline{e}}$$