MA

a) $f(x)=\frac{1}{2}x^2-3x$ $N_{S1}=0$ $f'(x)=x-3$ $f''(x)=1$

$x(\frac{1}{2}x-3)=0$ $N_{S2}=6$

$0=0,5x-3 \mid +3$

$3=0,5x \mid :0,5$

$6=x$

$f'(x)=0=x-3 \mid +3$

$3=x$

$f''(3)=1>0=$ Minimum

$\frac{1}{2}\cdot 3^2-3\cdot 3=-4,5$

$TP=[3 \mid -4,5]$

$A=\int_0^6 (\frac{1}{2}x^2-3x)\,dx=[\frac{1}{6}x^3-1,5x^2]$

$\frac{1}{6}x^3-1,5x^2$

$\frac{1}{6}\cdot 6^3-1,5\cdot 6^2$

-18

b) $f(x)=\frac{1}{2}x^4+x^3$ $x_1=x_2=0$ $f'(x)=2x^3+3x^2$

$x^3(\frac{1}{2}x+1)=0$ $x_3=-2$ $f''(x)=6x^2+6x$

$0=\frac{1}{2}x+1 \mid -1$

$-1=\frac{1}{2}x \mid :\frac{1}{2}$

$x=-2$

$f'(0)=2x^3+3x^2=0$

$x^2(2x+3)=0$

$0=2x+3 \mid -3$

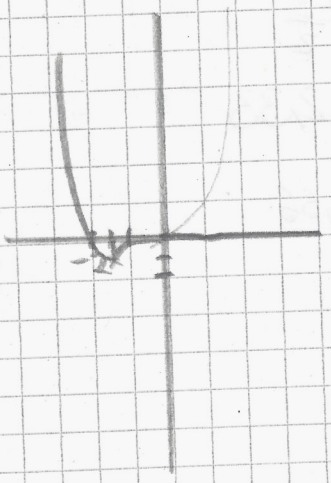
$-3=2x \mid :2$

$-1,5=x$

$f''(-1,5)=-2<0=$ MAX HOP $=-1,5 \mid -0,84$

$f(-1,5)=-0,84$

$A=\int$



c) $f(x) = -x^4 + 6x^3 - 9x^2$ $\quad f'(x) = 20x^3 + 18x^2 - 18x$

$x^2(-x^2 + 6x - 9)$

$-\frac{6}{-9} \pm \sqrt{(\frac{6}{2})^2 + 9}$

$\frac{2}{3} + \sqrt{18}$

$\frac{2}{3} + 3\sqrt{2}$ $\quad +4,91$ $\quad -3,58$

$N_1 = 0$

$N_2 = 4,91$

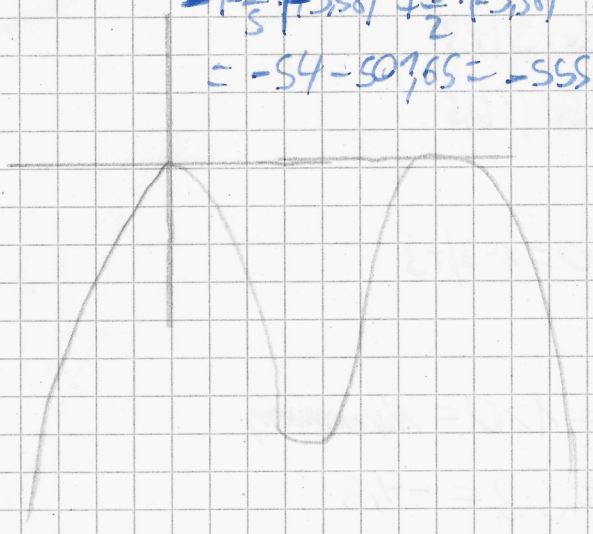
$N_3 = -3,58$

$A = \int_{-3,58}^{4,91} (-x^4 + 6x^3 - 9x^2)\,dx = \left[-\frac{1}{5}x^5 + \frac{3}{2}x^4 - 3x^3\right]$

$-\frac{1}{5} \cdot 4,91^5 + \frac{3}{2} \cdot 4,91^4 - 3 \cdot 4,91^3 = (-54)$

$-(-\frac{1}{5} \cdot (-3,58)^5 + \frac{3}{2} \cdot (-3,58)^4 - 3 \cdot (-3,58)^3) = 501,65$

$= -54 - 501,65 = -555,65$



d) $f(x) = \frac{1}{2}x^2 - \frac{1}{2}x - 3$ $\quad f'(x) = 1x - \frac{1}{2}$ $\quad F(x) = \frac{1}{6}x^3 - \frac{1}{4}x^2 - 3x$

$f(x) = \frac{1}{2}x^2 - \frac{1}{2}x - 3 \mid : \frac{1}{2}$

$x^2 - 1x - 6$

$\frac{1}{2} \pm \sqrt{(\frac{1}{2})^2 + 6}$

$\frac{1}{2} + \sqrt{\frac{25}{4}}$

$\frac{1}{2} + \frac{5}{2}$ $\quad -\frac{7}{3} = 2,33$

$\frac{1}{2} - \frac{5}{2} = -2,66$

YAS $= -3$

$A = \int_{-2}^{3} (\frac{1}{2}x^2 - \frac{1}{2}x - 3)\,dx = \left[\frac{1}{6}x^3 - \frac{1}{4}x^2 - 3x\right]$

$-6,75 - 3,66 = -10,41$