Buch S 213 Nr 1, 2, 3

Nr 1

a) $\int_1^3 \frac{3}{4}x^2 + 1\, dx = \left[\frac{3}{12}x^3 + x\right]_1^3 = \left[\frac{1}{4}x^3 + x\right]_1^3$

$A_0 = \left(\frac{1}{4}\cdot 3^3 + 3\right) - \left(\frac{1}{4}\cdot 1^3 + 1\right)$

$= 8{,}5$

b) $\int_{-2}^{1} -x^2 - 2x + 4\, dx = \left[-\frac{1}{3}x^3 - x^2 + 4x\right]_{-2}^{1}$

$A_0 = -\frac{1}{3}\cdot 1^3 - 1^2 + 4\cdot 1 - \left(-\frac{1}{3}\cdot(-2)^3 - (-2)^2 + 4\cdot(-2)\right)$

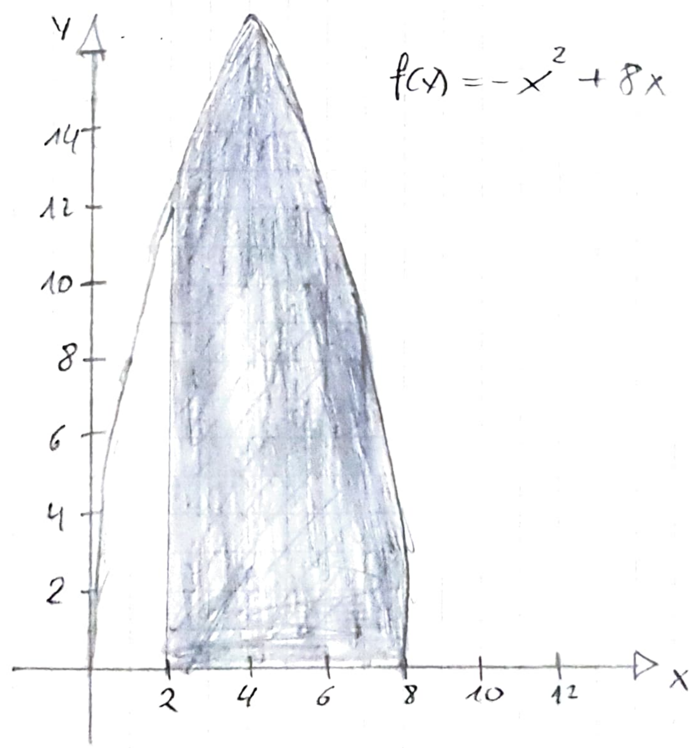
$= 12$

c) $\int_{-2}^{2} -x^4 + 3x^2 + 4\, dx = \left[-\frac{1}{5}x^5 + x^3 + 4x\right]_{-2}^{2}$

$A_0 = -\frac{1}{5}\cdot 2^5 + 2^3 + 4\cdot 2 - \left(-\frac{1}{5}\cdot(-2)^5 + (-2)^3 + 4\cdot(-2)\right)$

$= 19{,}2$

Nr 2



$\int_2^8 -x^2 + 8x\, dx = \left[-\frac{1}{3}x^3 + 4x^2\right]_2^8$

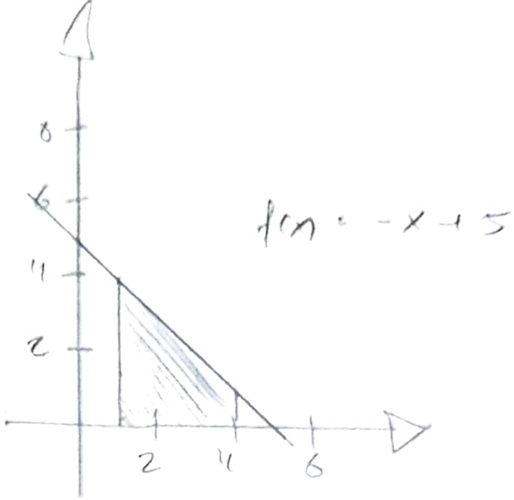
$A_0 = \left(-\frac{1}{3}\cdot 8^3 + 4\cdot 8^2\right) - \left(-\frac{1}{3}\cdot 2^3 + 4\cdot 2^2\right)$

$= \left(-\frac{1}{3}\cdot 512 + 4\cdot 64\right) - \left(-\frac{1}{3}\cdot 8 + 4\cdot 4\right)$

$= 85{,}3 - 13{,}3 = \underline{72}$

Nr. 3

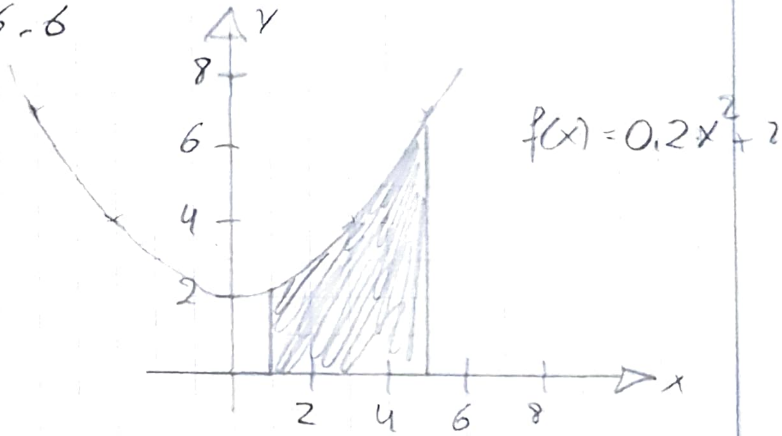
a) $A = \frac{4 \cdot 4}{2} = 8$



b) $\int_1^5 0{,}2x^2 + 2\,dx = \left[\frac{0{,}2}{3}x^3 + 2x\right]_1^5$

$A_0 = \frac{0{,}2}{3} \cdot 5^3 + 2 \cdot 5 - \frac{0{,}2}{3} \cdot 1^3 + 2 \cdot 1$

$= 16{,}6$



c) $\int_1^5 x^3 + 1\,dx = \left[\frac{1}{4}x^4 + x\right]_1^5$

$A_0 = \left(\frac{1}{4} \cdot 5^4 + 5\right) - \frac{1}{4} \cdot 1^4 + 1$

$= 160$