HA 19.03.2020

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Mathematik

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

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

$= 8{,}5$

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

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

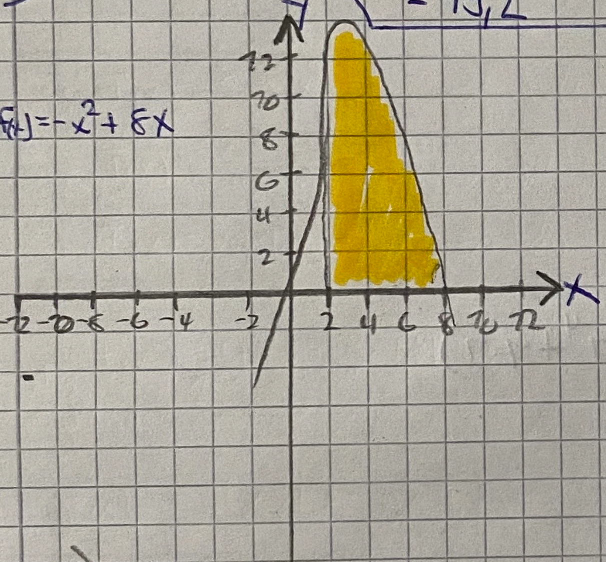
$= 12$

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

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

$= 19{,}2$

② $f(x) = -x^2+8x$

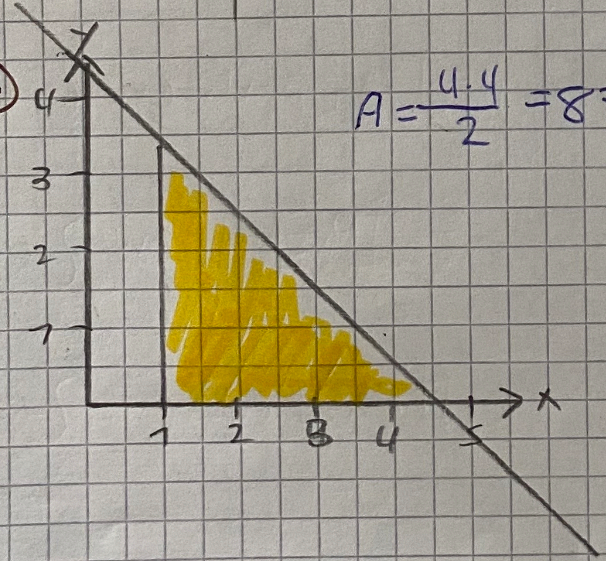


$\int_2^8 -x^2+8x\,dx = \left[-\frac{1}{3}x^3+4x^2\right]_2^8$

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

$= 66{,}7$

③ a.)



$A = \frac{4\cdot 4}{2} = 8$ FE