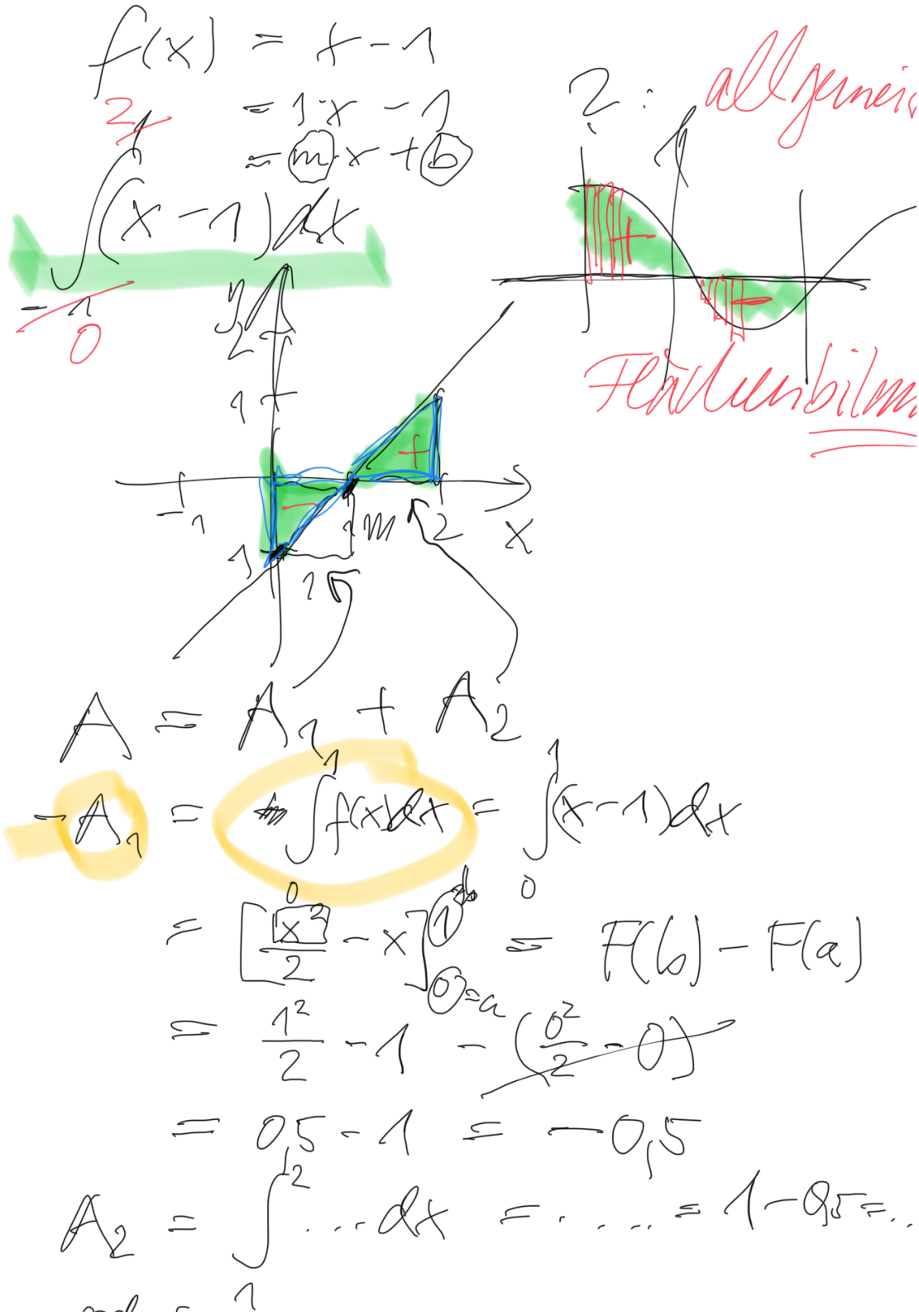
Ma GK 22.3.2020 | 1/2 | Abiturvorbereitung
Analysis :: Integral/Stammfunktion/Aufleitung · Integral als Flächeninhalt und (richtiger) Flächenbilanz

Probeklausur 13.2 | Hilfsmittelfreier Teil A1



(XXX)

Aufleitungen / Stammfunktion / „Integral"

Beispiele

- „$x \uparrow$" $= \int x\,dx = \frac{x^2}{2} + C$

oder:

$f(x) = x \qquad F(x) = \frac{x^2}{2}$

- $\int x^2\,dx = \frac{x^3}{3} + C$
- $\int 6x^2\,dx = 2x^3 + C$ ↪

$= \frac{6 \cdot x^3}{3_1} + C =$

- $\int 5x^3\,dx = 5 \cdot \frac{x^4}{4} + C$

$\left[= \frac{5}{4}x^4 + C \; (= 1{,}2x^4 + C)\right]$

- $\int (2x^3 + x)\,dx = \frac{1}{2} \cdot \frac{x^4}{4_2} + \frac{x^2}{2} + C$

$= \frac{x^4}{2} + \frac{x^2}{2} + C$

$\left[= \frac{x^4 + x^2}{2} + C\right]$

$\left[= x^2(x^2 + 1)\right]$

$$\left[= \frac{}{2} + C \right]$$

- $\int e^x dx = e^x + C$
- $\int 2e^x dx = 2e^x + C$
- $\int (2e^x + 1) dx = 2e^x + x + C$
- $\int 2e^{x+1} dx = 2 \cdot \frac{1}{1} \cdot e^{x+1} + C$
- $\int 2e^{3x+1} dx = 2 \cdot \frac{1}{3} e^{3x+1} + C$

$$\left[= \frac{2}{3} \cdot e^{3x+1} + C \right]$$

- $\int 9 \cdot e^{-6x+2} dx = 3 \not{9} \cdot \left(-\frac{1}{\not{6}_2} \cdot e^{-6x+2} \right) + C$

$$= -\frac{3}{2} \cdot e^{-6x+2} + C$$

- $\int e^{-2x} dx = \frac{1}{-2} e^{-2x} + C = -\frac{1}{2} e^{-2x} + C$
- $\int e^{-x} dx = -\frac{1}{1} e^{-x} + C = -e^{-x} + C$
- $\int \sqrt[2]{x} dx = \text{FS:} \ldots$

$$= \int x^{\frac{1}{2}} dx = \frac{x^{1,5}}{1,5} + C$$

$$= \frac{2}{3} x^{3/2} + C$$

$$= \frac{2}{3} \cdot \sqrt{x}^{3} + C$$

$$= \frac{2}{3} \sqrt{x}^{3} + C$$

$$\left[\frac{1}{2}+1 = \frac{1}{2}+\frac{2}{2} = \frac{1+2}{2} = \frac{3}{2}\right]$$

$$\int \sqrt[3]{x}\, dx = \int x^{1/3}\, dx$$

$$= \frac{3}{4} \cdot x^{4/3} + C$$

$$= \frac{3}{4} \cdot \sqrt[3]{x^4} + C$$