Woche 1 Corona

Donnerstag, 19. März 2020 13:24

Sync Status

S. 213 Nr. 1+2+3

(1)

a) $f(x) = \frac{3}{4}x^2 + 1$ Intervall $[1,3]$

$F(x) = \frac{0{,}75}{3}x^3 + 1x + C$

$$I = \int_1^3 f(x) = \frac{3}{4}x^2 + 1 \, dx = \left[\frac{0{,}75}{3}x^3 + 1x\right]_1^3$$

$= 9{,}75 - 1{,}25 = 8{,}5$ FE

c) $h(x) = -x^4 + 3x^2 + 4$ Intervall $[-2;2]$

$H(x) = -\frac{1}{5}x^5 + \frac{3}{3}x^3 + 4x$

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

$\frac{48}{5} - \left(-\frac{48}{5}\right) = 0$ FE

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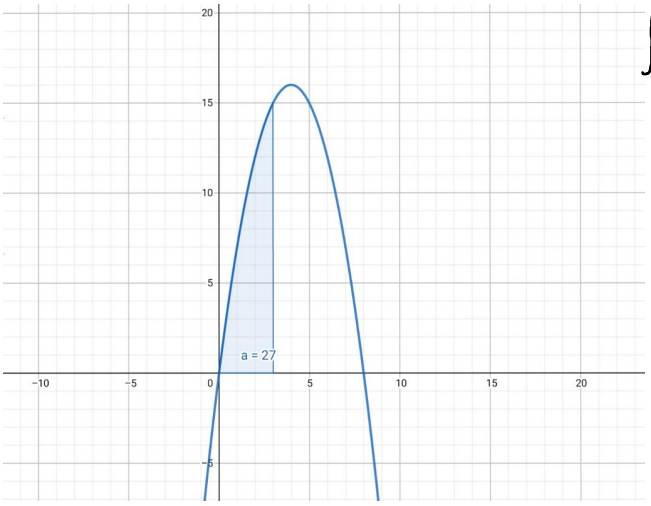
② 

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

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

$$-\frac{8}{3}+16-\left(-\frac{512}{3}+256\right)$$

$$\frac{40}{3}-\left(-\frac{256}{3}\right)$$

$$\frac{296}{3}\,FE$$

③ a) $f(x)=-x+5$

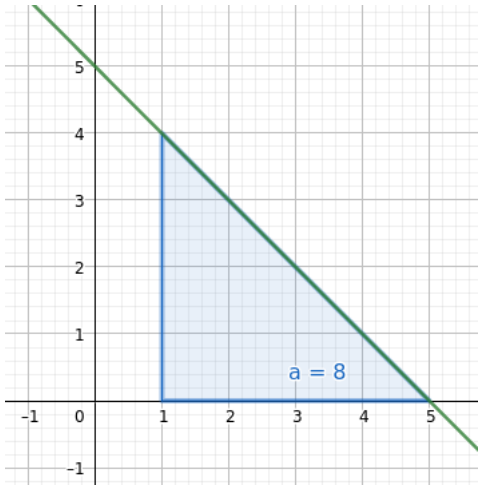
$$A=\int_1^5(-x+5)dx\left[-\frac{1}{2}x^2+5x\right]_1^5$$

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

$$-\frac{1}{2}+5-\left(-12{,}5+25\right)$$

$$4{,}5-(+12{,}5)$$

$-8\,FE$



b) $f(x)=0{,}2x^2+2$

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

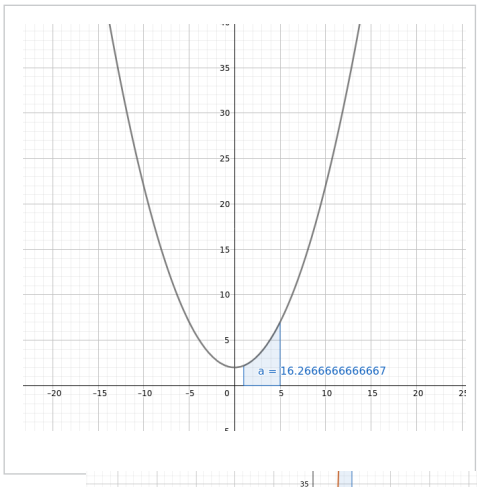
$$\frac{1}{15}\cdot 1^3+2\cdot 1+C-\left(\frac{0{,}2}{3}\cdot 5^3+2\cdot 5+C\right)$$

$$\frac{1}{15}+2+C-\left(\frac{1}{15}\cdot 125+10+C\right)$$

$$\frac{31}{15}+C-\left(\frac{25}{3}+10+C\right)$$

$$\frac{31}{15}+\cancel{C}-\left(\frac{55}{3}+\cancel{C}\right)$$

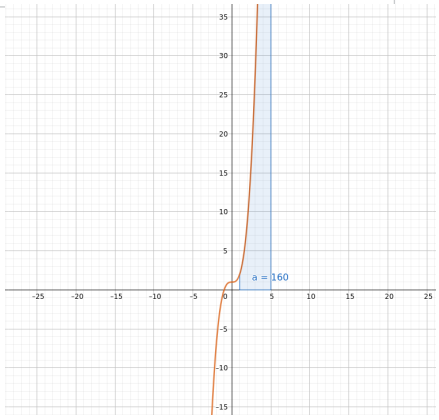
$16{,}27\,FE$



c) $f(x)=x^3+1$

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

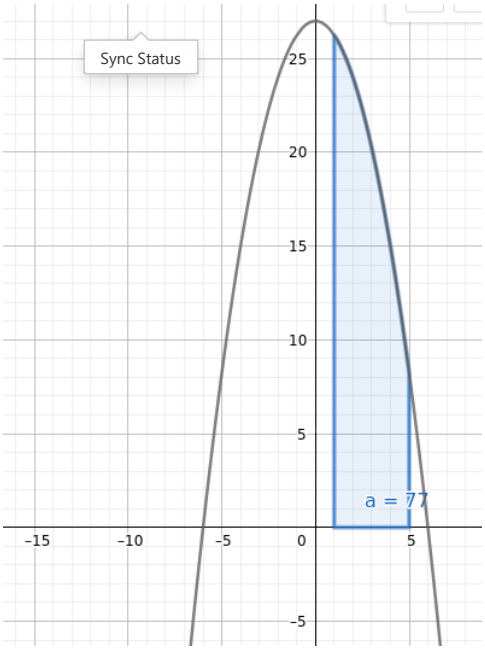
$$36{,}25-\frac{5}{4}=35\,FE$$



d) $-\frac{3}{4}x^2+27$

$$\int_1^5 \left(-\frac{3}{4}x^2+27\right)dx \left[-\frac{1}{4}x^3+27x+c\right]_1^5$$

$103{,}75-26{,}75 = 27\ FE$



Hallo Frau Wesp,
Leider habe ich außer bei b immer falsche Ergebnisse ausgerechnet. Woran liegt das? Ich finde den Fehler leider nicht...

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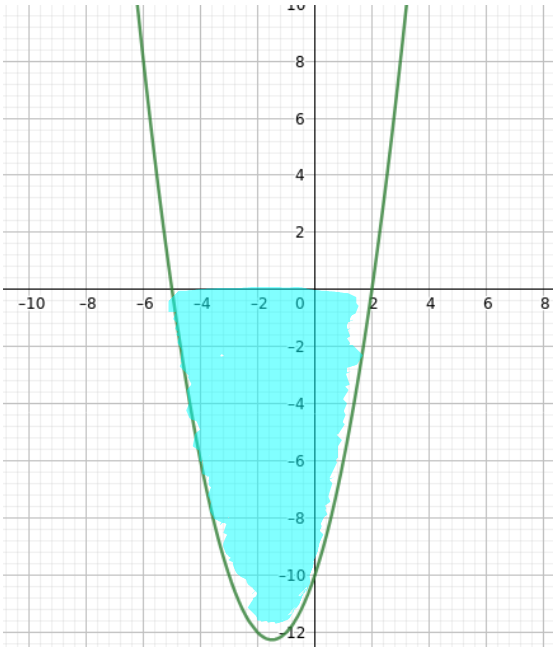
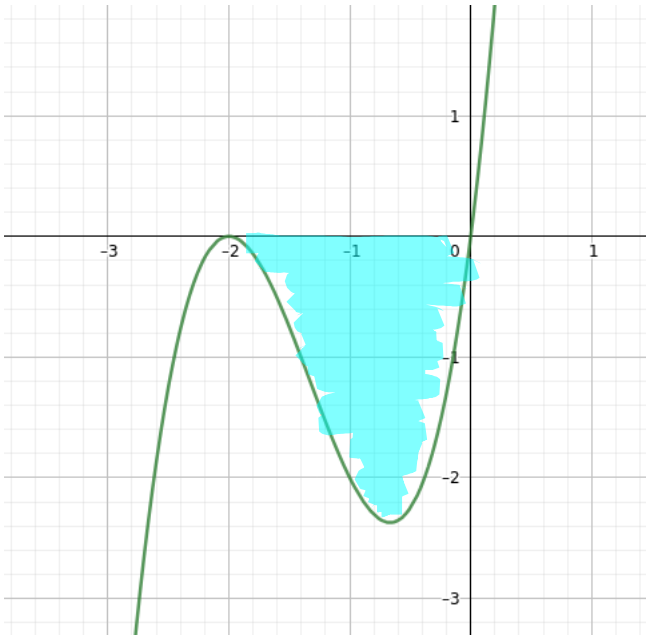


a) $f(x) = x^2+3x-10$

$$\int_{-5}^{2} \left(x^2+3x-10\right)dx \left[\frac{1}{3}x^3+\frac{3}{2}x^2-10x+\right.$$

$45{,}83-(-11{,}33)$

$57{,}16\ FE$



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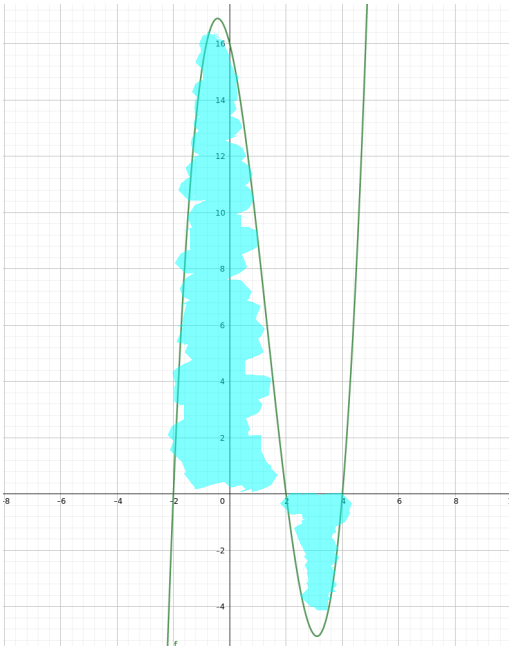
b) $f(x) = 2x^3 + 8x^2 + 8x$

$$\int_{-2}^{0} \left(2x^3 + 8x^2 + 8x\right) dx \quad \left[\frac{2}{4}x^4 + \frac{8}{3}x^3 + \frac{8}{2}x^2\right]_{-2}^{0}$$

$$\frac{8}{3} - 0 = \frac{8}{3} \text{ FE}$$



c) $f(x) = (x^2 - 4)(x - 4)$

$\int$ 2.