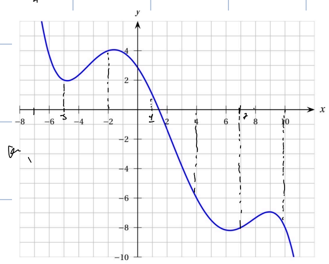
4.1



intervalle $[-5,10]$ G_5 D_5

$\Delta x = \frac{b-a}{n} = \frac{10-(-5)}{5} = \frac{15}{5} = 3$

1: $[-5,-2]$
2: $[-2,1]$
3: $[1,4]$
4: $[4,7]$
5: $[7,10]$

G: les x à gauche
D: les x à droites

a) $G_5 = 3\cdot[f(-5)+f(-2)+f(1)+f(4)+f(7)]$

$= 3\cdot(2+4+1+-6-8)$

$= 3\cdot(-7)$

$= -21$

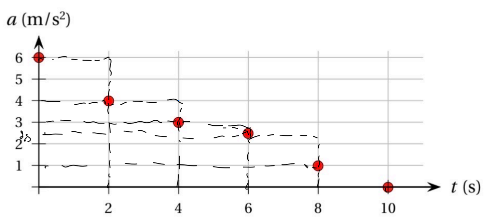
$D_5 = 3\cdot[f(-2)+f(1)+f(4)+f(7)+f(10)]$

$= 3(4+1+-6+-8+-8)$

$= -51$

n = est un choix, sauf si indiqué $n = 5$ ou G_5, D_5

4.2



$a = 0$
$b = 10$

$\frac{b-a}{n} = \frac{10-0}{5} = 2$

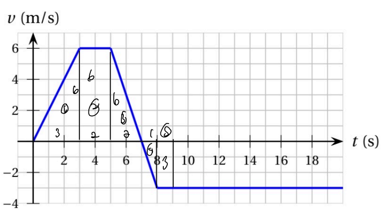
n	x_i	$f(x_i)$
0	0	6
1	2	4
2	4	3
3	6	2,5
4	8	1
5	10	0

$G_5 = 2\cdot(6+4+3+2{,}5+1)$
$= 33$

$D_5 = 2\cdot(1+2{,}5+3+4)$
$= 21$

$x(t) \xrightarrow{\text{dérivé}} v(t) \xrightarrow{\text{dérivé}} a(t)$, intégrale

4.8



① $\triangle$ $\frac{b\cdot h}{2} = \frac{3\cdot 6}{2} = 9\,m$

② $\square$ $h\cdot l = 6\cdot 2 = 12\,m$

$9+12 = 21\,m$

③ $\frac{b\cdot h}{2} = 6\,m$

④ $3\cdot 1 = 3$

⑤ $3\cdot 1 = 3$

4.9

a) $\int_{-2}^{0} f(x)\,dx \qquad a = \square^2 = 4$

b) $\int_{-2}^{4} f(x)\,dx \qquad \square + \triangle + \triangle$

$c \cdot c + \frac{(B + b) \cdot h}{2} + \frac{b \cdot h}{2}$

$4 + 4 + 4$

4,18

k) $\int \frac{3}{1+x^2}\,dx \overset{\substack{a=1\\u=1}}{=} 3\frac{1}{a}\arctan\left(\frac{u}{a}\right) + C$

$= 3\arctan(x) + C$

e) $\int \frac{-2}{\sqrt{1-x^2}}\,dx = -2\arcsin(x) + C$

F19 $a=1$, $u=x$

z) $\int \frac{1}{\sqrt{4x^2+1}}\,du = \ln\left(\sqrt{4x^2+1^2} + 2x\right) + C$

$u^2 = 4x^2 \Rightarrow u = 2x$

$a^2 = 1 \Rightarrow a = 1$

$du = d(2x) = 2dx \Rightarrow dx = \frac{1}{2}du$

$\frac{1}{2}\int \frac{1}{\sqrt{u^2+a^2}}\,du = \frac{1}{2}\ln\left(\sqrt{u^2+a^2} + u\right) + C$

z1) $\int \sin(4x)\,dx$

$\int -\frac{1}{4}\cos(4x) + C$

$\frac{1}{4}\int \sin(u)\,du$

$u = 4x \quad du = 4dx \Rightarrow dx = \frac{1}{4}du$

z2) $\int x e^{x^2}\,dx$

$\int e^u\,du = e^u + C \qquad \frac{1}{2}\int e^u\,du = \frac{1}{2}e^u + C$

$= \frac{1}{2}e^{x^2} + C$

$u = x^2 \quad du = 2x\,dx$

$x\,dx = \frac{1}{2}du$

$\frac{du}{dx} = 2x\,dx$

dérivée de du par rapport à dx

z3) $\int \frac{1}{x^2+2x+5}\,dx$

$\Rightarrow \frac{1}{(x+1)^2+4}\,dx \Rightarrow \int \frac{1}{u^2+2^2}\,du = \frac{1}{2}\arctan\left(\frac{u}{2}\right) + C$

$= \frac{1}{2}\arctan\left(\frac{x+1}{2}\right) + C$

$u = x+1 \Rightarrow du = dx$

$a^2 = 4 \Rightarrow a = 2$

4,28

$v(t) = \frac{t^2}{5} - 2 \quad , \quad h(0) = 5$

a) $h(t) - h(0) = \int_0^t \left(\frac{x^2}{5} - 2\right)dx$

ou $v(x)$ si $v(t) := \frac{t^2}{5} - 2$

$h(t) := 5 + \int_0^t \left(\frac{x^2}{5} - 2\right)dx$

terminer

$h(2)$

$h(5)$

solve $(v(t) = 0, t)$

$a(t) := \frac{d}{dt}(v(t))$

$a(t)$

$a(5)$

$v(4)$

solve $(h(t) = 5, t)$

les signes $\left\{ \begin{array}{l} h(2) \\ v(2) \\ a(2) \end{array} \right.$