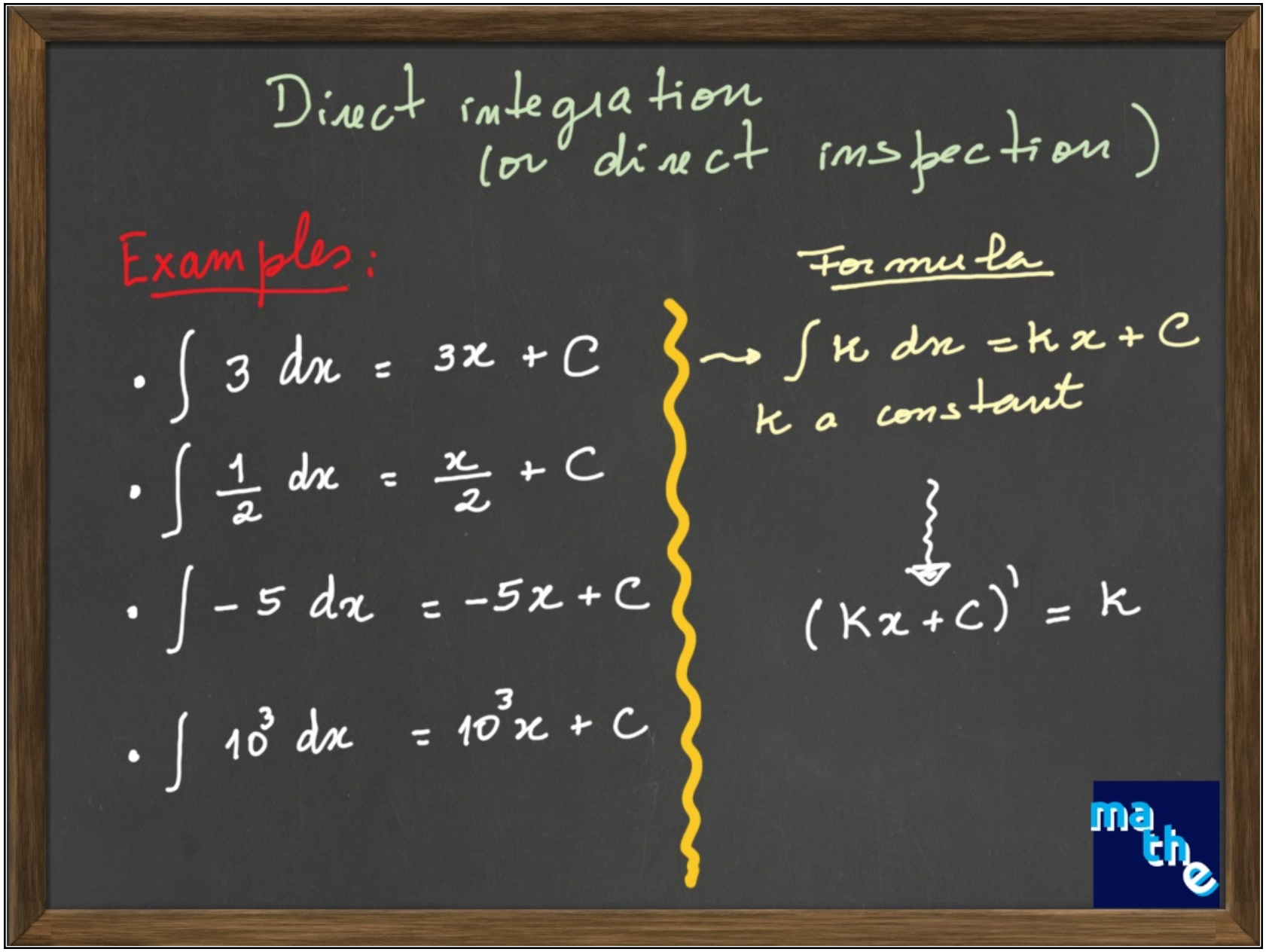
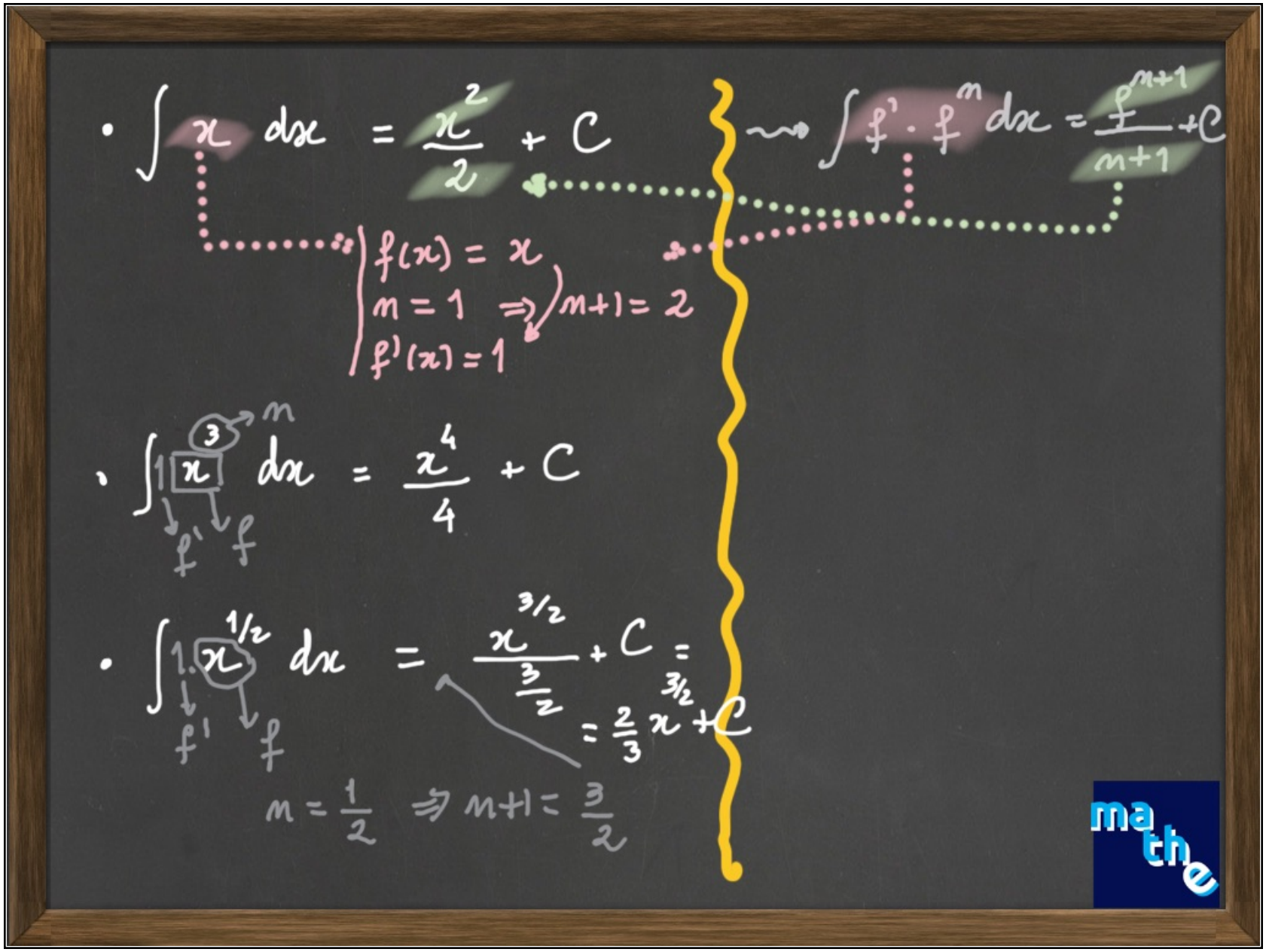
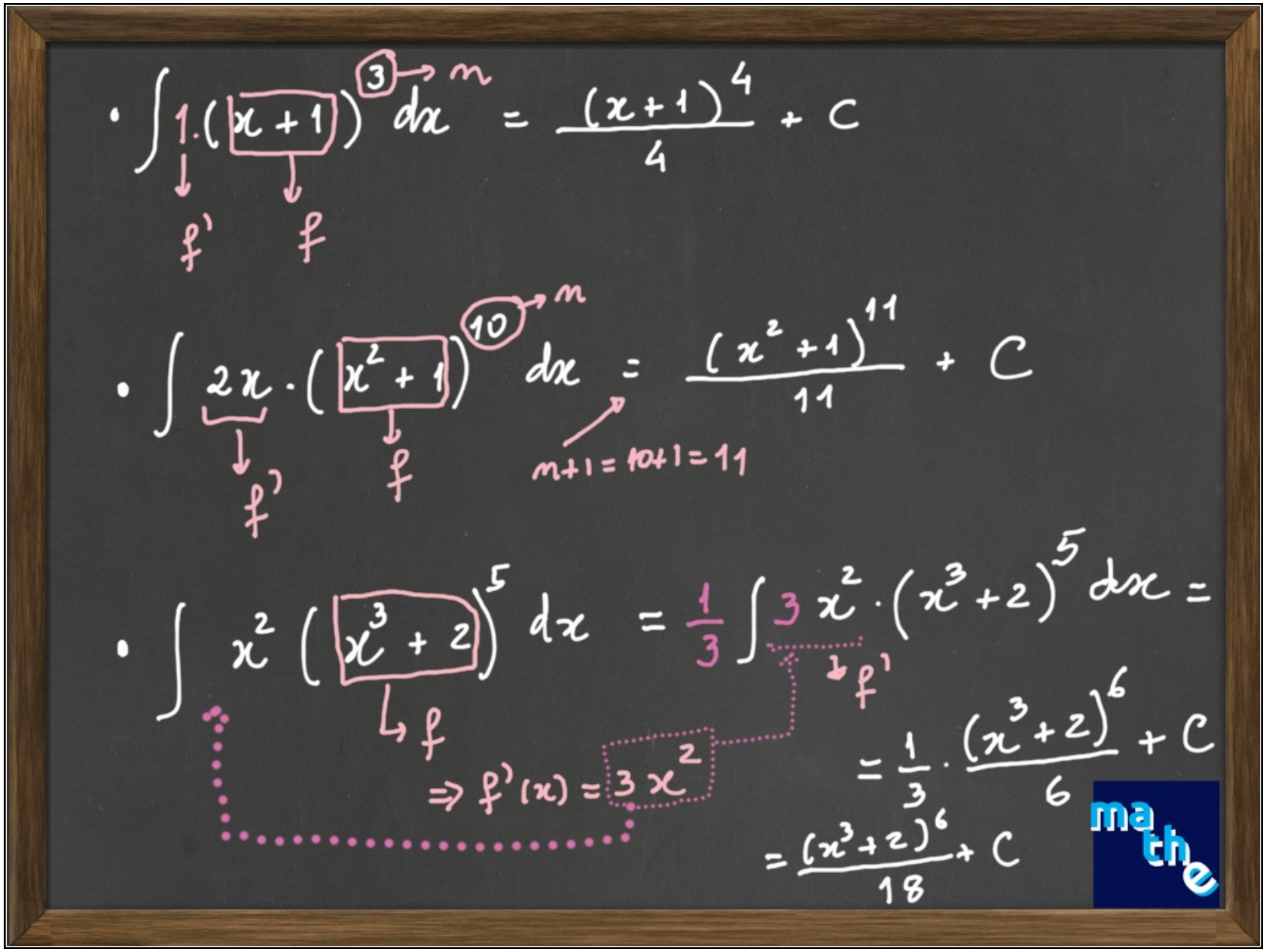

Direct integration
(or direct inspection)
Examples:
$\bullet \int 3\,dx = 3x + C$
$\bullet \int \frac{1}{2}\,dx = \frac{x}{2} + C$
$\bullet \int -5\,dx = -5x + C$
$\bullet \int 10^3\,dx = 10^3 x + C$
Formula
$\int k\,dx = kx + C$
k a constant
$(Kx + C)' = k$
math


$\int x\,dx = \frac{x^2}{2} + C$
$\rightsquigarrow \int f' \cdot f^n\,dx = \frac{f^{n+1}}{n+1} + C$
$f(x) = x$
$n = 1 \Rightarrow n+1 = 2$
$f'(x) = 1$
$\int 1 \cdot x^3\,dx = \frac{x^4}{4} + C$
$f'$ $f$ $n$
$\int 1 \cdot x^{1/2}\,dx = \frac{x^{3/2}}{\frac{3}{2}} + C = \frac{2}{3}x^{3/2} + C$
$n = \frac{1}{2} \Rightarrow n+1 = \frac{3}{2}$
math


$\int 1 \cdot (x+1)^3 \, dx = \frac{(x+1)^4}{4} + C$
f' f
3 → n
$\int 2x \cdot (x^2+1)^{10} \, dx = \frac{(x^2+1)^{11}}{11} + C$
f' f
10 → n
n+1 = 10+1 = 11
$\int x^2 (x^3+2)^5 \, dx = \frac{1}{3} \int 3x^2 \cdot (x^3+2)^5 \, dx =$
f
f'
$\Rightarrow f'(x) = 3x^2$
$= \frac{1}{3} \cdot \frac{(x^3+2)^6}{6} + C$
$= \frac{(x^3+2)^6}{18} + C$
math