

the summer



example



(because integral is indefinite)

the sum rule

As with differentiation, we also have a sum rule for integration, that is

$$\int (f(x) + g(x)) dx = \int f(x) dx + \int g(x) dx$$

"the antiderivative of a sum is the sum of the antiderivatives"

we also have that $\int Kf(x) dx = K \int f(x) dx$ where K is a constant

example

$$\begin{aligned} \int (3x^4 + 2x + 5) dx &= \int 3x^4 + \int 2x dx + \int 5 dx \\ &= 3 \int x^4 + 2 \int x dx + 5 \int dx \\ &= \frac{3}{4}x^5 + \frac{2}{3}x^3 + 5x + \textcircled{C} \quad (\text{because integral is indefinite}) \end{aligned}$$

the sum rule