

Special case:

a, b constants

$$F(x) = \int_a^x f(x, t) dt$$

$$\frac{dF}{dx} = \frac{d}{dx} \left[\int_a^x f(x, t) dt \right]$$

↓
Leibniz's formula

$$\approx \frac{dF}{dx} = \int_a^x \frac{\partial f}{\partial x}(x, t) dt$$

can interchange differentiation
and integration