

In general

Eg.

$$\frac{d}{dx} \int_0^{s(x)} h(t(x), y) dy$$

$$= \frac{d}{dx} W(s(x), t(x))$$

$$= \partial_1 W(s(x), t(x)) s'(x) + \partial_2 W(s(x), t(x)) \cdot t'(x)$$

$$= h(t(x), s(x)) \cdot s'(x) + \left(\int_0^{s(x)} \partial_1 h(t(x), y) dy \right) t'(x)$$

If $s(x) = x$. $t(x) = x$

$$= h(x, x) + \int_0^x \partial_1 h(x, y) dy$$