the chain rule

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Let's now consider differentiating "compositions" of functions:

$$f \circ g(x) = f(g(x)) \quad \text{"do g then f"}$$

or

$$f \circ g \circ h(x) = f(g(h(x))) \quad \text{"do h then g then f"}$$

If f and g are differentiable, then

$$\frac{d}{dx}\Big(f(g(x))\Big) = f'(g(x)) \cdot g'(x)$$

the chain rule