

## REPETITION 24/01

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Chain rule       $H(a) = F(G(a))$

$$\Rightarrow H'(a) = F'(G(a)) \cdot G'(a)$$

Chain rule in component form

$$\frac{\partial H_i}{\partial x_j}(a) = \frac{\partial \bar{F}_i}{\partial u_1}(G(a)) \cdot \frac{\partial G_1}{\partial x_j}(a) + \dots + \frac{\partial \bar{F}_i}{\partial u_m}(G(a)) \cdot \frac{\partial G_m}{\partial x_j}(a)$$

Example       $g(x,y) = xy$        $h(x,y) = x+y$        $f(u,v) = u^2v$

let  $k(x,y) = f(g(x,y), h(x,y))$

Compute  $\frac{\partial k}{\partial x}(x,y)$