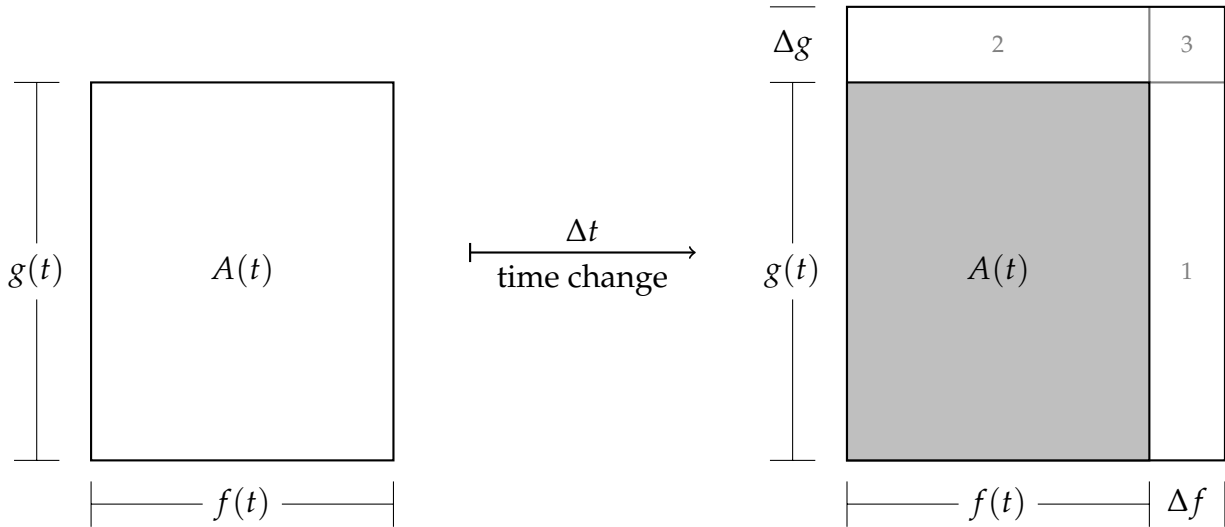


Lecture Handout #14: Oct 18

Product Rule Motivation

Rectangle: Width $f(t)$, Height $g(t)$

Area: $A(t) =$ _____



Change in area: $\Delta A =$ _____ \cdot _____ $+$ _____ \cdot _____ $+$ _____ \cdot _____

Rate of change: $\frac{\Delta A}{\Delta t} =$ _____ \cdot _____ $+$ _____ \cdot _____ $+$ _____ \cdot _____ \cdot _____

Derivative: $\frac{dA}{dt} =$ _____ \cdot _____ $+$ _____ \cdot _____ $+$ _____

Derivatives from Tables of Values

x	1	2	3	4	5
$f(x)$	4	3	1	2	5
$f'(x)$	-1	-2	0	1	4
$g(x)$	5	6	4	2	3
$g'(x)$	2	0	-3	1	2

Combinations:

$H(x) = f(g(x))$

$Q(x) = g(f(x))$

$P(x) = f(x)g(x)$

$H'(3) =$ _____ \times _____ $=$ _____ $H'(\underline{\quad}) =$ _____ \times _____ $=$ _____

$Q'(3) =$ _____ \times _____ $=$ _____ $Q'(\underline{\quad}) =$ _____ \times _____ $=$ _____

$P'(3) =$ _____ $+$ _____ $=$ _____ $P'(\underline{\quad}) =$ _____ $+$ _____ $=$ _____