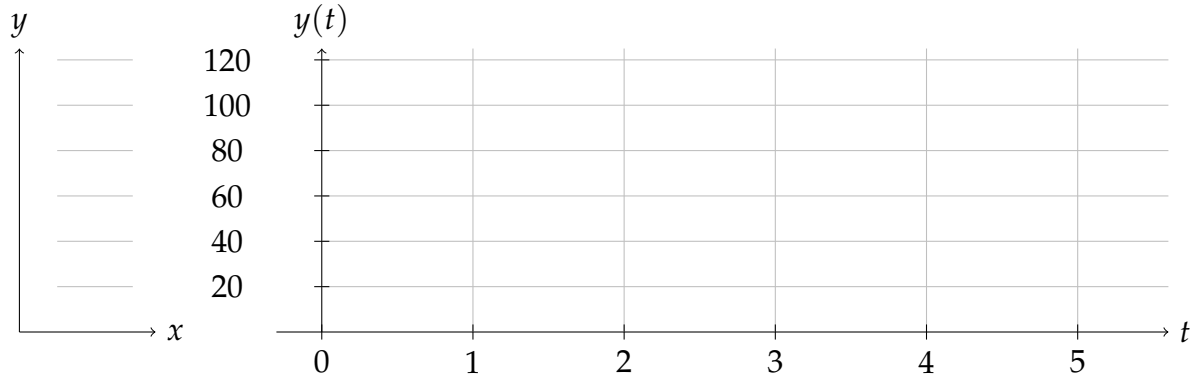
Lecture Handout #08: Sep 22

Instantaneous Velocity

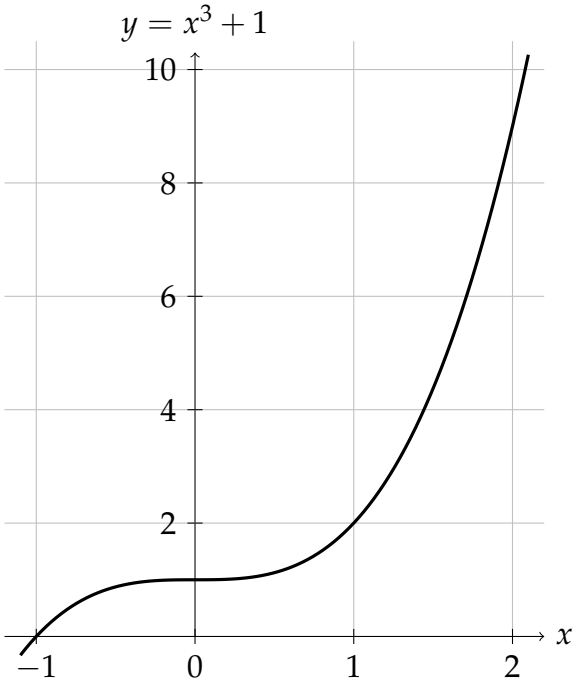
A tennis ball is thrown up into the air with initial velocity 80 ft/s. $y(t) =$ _____



Estimate the instantaneous velocity: $v =$ _____ ft/s at $t_1 = 2$ s

Δt	t_2	$y(t_2)$	Δy	v_{avg}	Δt	t_2	$y(t_2)$	Δy	v_{avg}
1	3	96	0	0	-1	1	64	-32	32
0.5					-0.5				
0.1					-0.1				
0.01					-0.01				
0.001					-0.001				

The Derivative: Instantaneous Rate of Change



Base point $a =$ _____ $f(a) =$ _____

Δx	b	$f(b)$	Δy	m_{secant}
1				
0.1				
0.01				
0.001				

a	$f(a)$	$f'(a)$	tangent line
-1			
0			
1			
2			