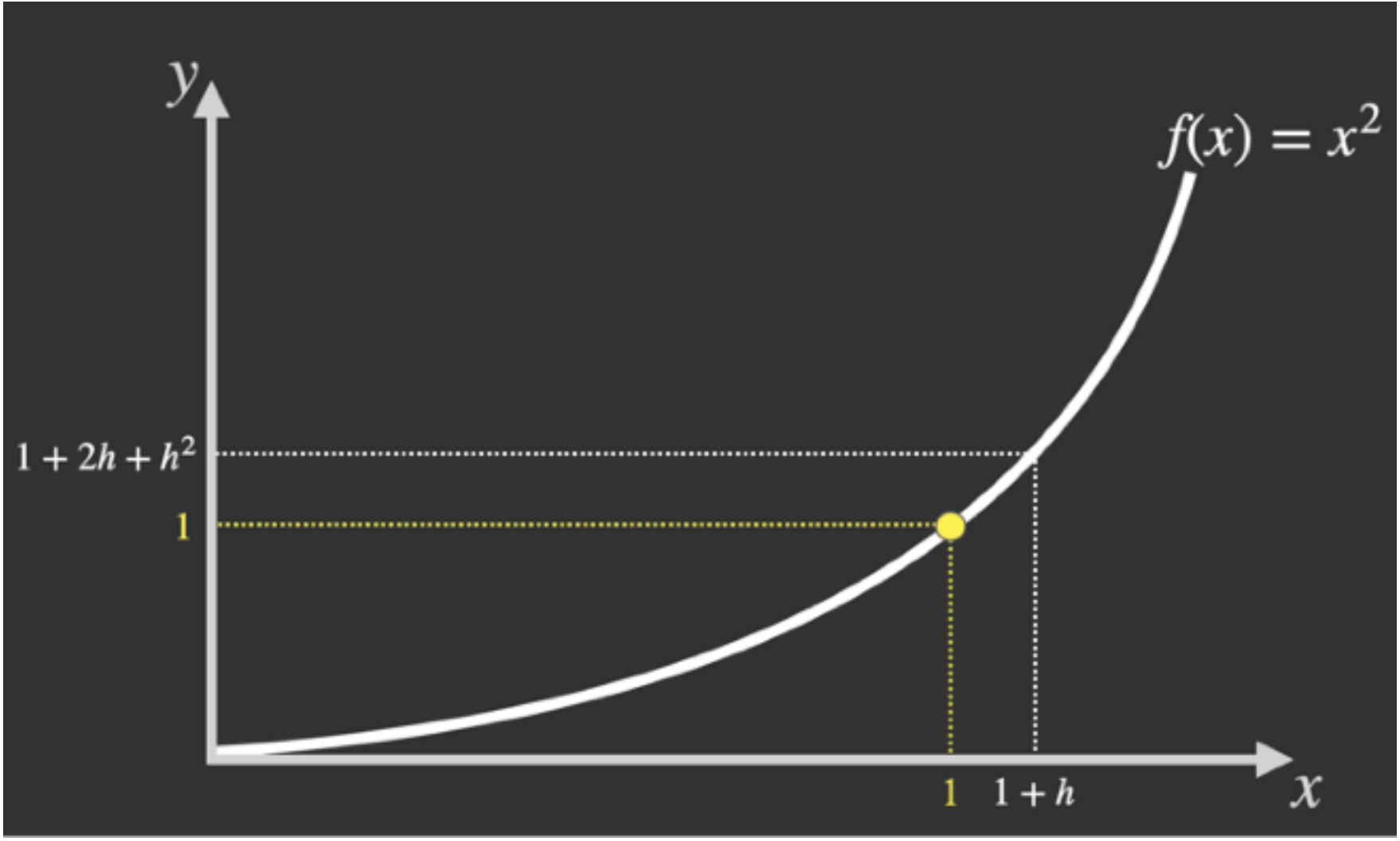
finding the slope at a point

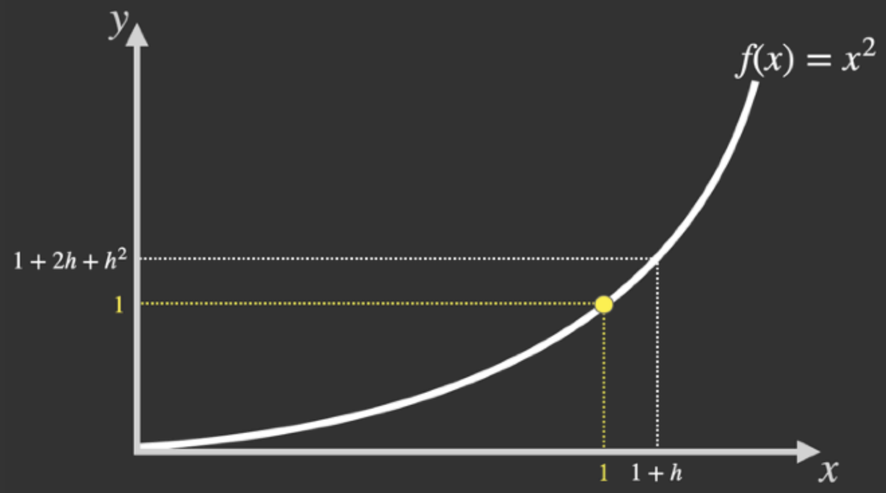

y
f(x) = x^2
1 + 2h + h^2
1
1
1 + h
x

finding the slope at a point

1. Near 1 the value of $f(x)$ is also near 1, since if h is small, then $2h + h^2$ is also small (this is the concept of continuity)
2. Increasing x from 1 to $1 + h$ will increase the value of $f(x)$ from $f(1)$ to $f(1) + 2h + h^2$ which is an increase of approximately $2h$

$\Longrightarrow$ the rate of change at 1,
defined as the derivative of the function $f(x) = x^2$,
is $f'(1) = 2$

What about when $x = c$?



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