

## AP Limit Definition of Derivative

$$\text{EX) } \lim_{h \rightarrow 0} \frac{\cos\left(h + \frac{\pi}{3}\right) - \cos\left(\frac{\pi}{3}\right)}{h} =$$

Sneaky way of saying “find the derivative of  $f(x) = \cos x$  evaluated at  $x = \frac{\pi}{3}$ ”

So, none of the methods for limits are actually used to find this limit!

$$\text{EX) Use the calculator to find } \lim_{\Delta x \rightarrow 0} \frac{\log(9 + \Delta x) - \log 9}{\Delta x} =$$

Sneaky way of saying “find the derivative of  $f(x) = \log x$  evaluated at  $x = 9$ ”