Estimating the derivative from data

The table below gives values of concentation (mg/cc) of drug in the blood stream at time t.

t (mins)	0	0.1	0.2	0.3	0.4
$C(t)$ (mg/cc)	0.84	0.89	0.94	0.98	1.0

We can use the values of $C(t)$ to estimate $C'(t)$ at various points, e.g.

$$C'(0) \approx \frac{C(0.1) - C(0)}{0.1 - 0} = \frac{0.89 - 0.84}{0.1} = 0.5 \text{ mg/cc per min}$$

This means that at $t = 0$, the concentration is increasing at a rate of 0.5 mg/cc per min.