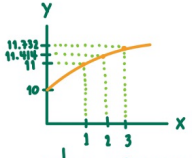
HW Given $y = 10 + \sqrt{x}$,

a) Find the derivative $f'(x)$. → $\frac{1}{2\sqrt{x}}$

b) Fill in the table

Point	X	Y	$f'(x)$
	0	10	Undefined
A	1	11	$\frac{1}{2}$
B	2	11.414	$\frac{\sqrt{2}}{4}$
C	3	11.732	$\frac{\sqrt{3}}{6}$



c) Does the slope increase as x increases? → when x increase slope is decrease

d) Approximate the change in Y when $\Delta x = 0.2$ at $x_1 = 3$. Is the approximation under- or over-estimate?

↳ $\Delta Y \approx \frac{1}{2\sqrt{x}} \cdot (0.2) = \frac{\sqrt{3}}{30} = 0.05773502692$ | $\Delta Y = Y_2 - Y_1 = 11.78885438 - 11.732 = 0.056854382$

0.057 > 0.056

Estimate Real

Thus, we Overestimate the real change of y

Note: If the function $f(x)$ is linear, the approximation is exact.

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