Supawit # 6304641498

HW Given $y = 10 + \sqrt{x}$, (only positive part)

a) Find the derivative $f'(x)$. $f'(x) = \frac{1}{2} \cdot x^{-\frac{1}{2}}$

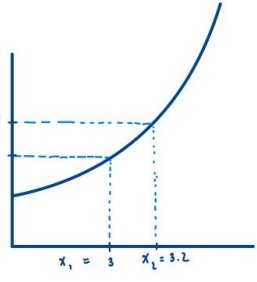
b) Fill in the table

Point	X	Y	$f'(x)$
	0	10	0
A	1	11	$\frac{1}{2}$
B	2	14	0.35
C	3	19	0.29

c) Does the slope increase as x increase? no, it does not

d) Approximate the change in Y when $\Delta x = 0.2$ at $x_1 = 3$. Is the approximation under- or over-estimate? slope · Δx => $\Delta y_2 \approx 0.29 \cdot 0.2$

$\Delta y_2 \approx 0.058$ —*



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

$x_2 = x_1 + \Delta x$

$x_2 = 3 + 0.2$

$x_2 = 3.2$

$f(3.2) = 10 + \sqrt{3.2}$

$f(3.2) = 11.79$

$y_2 = 11.79$ —*

$\therefore$ real $\Delta y = y_2 - y_1 = 11.79 - 11.73 = 0.06$ —*

$\therefore$ we conclude that approximation is underestimate compared to real Δy ans