

HW#3 Due Jan 25, 2022

HW Find the 2nd-order derivative of $y = f(x) = 10 + \sqrt{x}$ and fill in the table:

Point	x	y	$f'(x)$	$f''(x)$
	0	10	Does not exist	Does not exist
A	1	11	0.5	-0.25
B	2	11.414	0.3536	-0.0984
C	3	11.732	0.2887	-0.0481

$$f'(x) = 0(10)^{-1} + \frac{1}{2}x^{-\frac{1}{2}}$$

$$= 0 + \frac{1}{2} \cdot \frac{1}{\sqrt{x}}$$

$$= \frac{1}{2\sqrt{x}}$$

$$f''(x) = \frac{1}{2} \cdot -\frac{1}{2} \cdot x^{-\frac{3}{2}}$$

$$= -\frac{1}{4x^{\frac{3}{2}}}$$

$$= -\frac{1}{4x\sqrt{x}}$$

Plot the graph of y and $f'(x)$. Is $f'(x)$ linear? No, $f'(x)$ is hyperbola graph.

