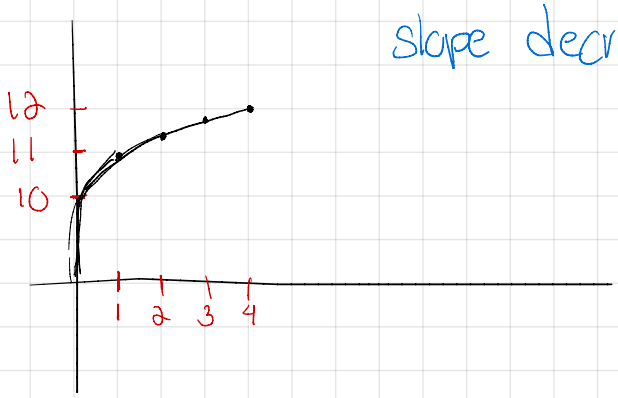
HW

$y = 10 + \sqrt{x}$



slope decrease!

x	y	$\frac{dy}{dx}$
0	10	NDF
1	11	$\frac{1}{2}$
2	$10+\sqrt{2}$	$\frac{1}{2\sqrt{2}} = \frac{\sqrt{2}}{4}$
3	$10+\sqrt{3}$	$\frac{1}{2\sqrt{3}} = \frac{\sqrt{3}}{6}$
4	12	$\frac{1}{2\sqrt{4}} = \frac{1}{4}$

$$\frac{dy}{dx} \quad \frac{d}{dx}\, 10+\sqrt{x} = \frac{1}{2\sqrt{x}}$$

When $x=2$, $y = 10+\sqrt{2}$ slope $= \frac{1}{2\sqrt{x}}$

$\Delta x = 0.1$ ——— x increase from 2 to 2.1

$\Delta y \approx \frac{dy}{dx} \times \Delta x = \frac{\sqrt{2}}{4} \times 0.1 = \frac{\sqrt{2}}{40} \approx 0.035$

What is the real change in y

$x = 2.1$, $y = 10+\sqrt{2.1} \approx 11.449\,14$

$\therefore \Delta y = 11.449\,14 - 11.414\,21 = 0.034\,93$ ✱

HW Find 2nd order derivative of $y = 10 + \sqrt{x}$ and plot that graph of y and $\frac{dy}{dx}$ is the slope of slope a constant.

$$y = 10 + \sqrt{x} \rightarrow y' = \frac{1}{2\sqrt{x}} \rightarrow y'' = -\frac{1}{4 \cdot \sqrt[3]{x^3}}$$

x	y	$\frac{dy}{dx}$ $\frac{1}{2\sqrt{x}}$
0	10	NDF
1	$10+\sqrt{1}$	$\frac{1}{2}$
2	$10+\sqrt{2}$	$\frac{1}{2\sqrt{2}}$
3	$10+\sqrt{3}$	$\frac{1}{2\sqrt{3}}$
4	$10+2$	$\frac{1}{2 \cdot 2} = \frac{1}{4}$