H.W. $y = 10 + \sqrt{x}$

x	y	dy/dx
0	10	$\frac{1}{2}$
1	11	
2	11.414	0.35
3	11.735	0.28

Find $\frac{dy}{dx}$

Approximate Δy when $x=2$, $\Delta x = 0.1$ and $\Delta x = 0.2$

Compare the actual

(i) $x = 2 \quad y = 11.414$

$\Delta x = 2.1$

$= \Delta y \approx \frac{dy}{dx}$

$0.35 \times 0.1 = 0.035$

$y = 10 + \sqrt{2.1} = 11.44$

$\Delta y = 11.44 - 11.414 \approx 0.036$

(II) $0.2 \quad x = 2 \quad y = 11.414$

$\Delta y \approx \frac{dy}{dx} \quad 0.35 \times 0.2 = 0.07$

$y = 10 + \sqrt{2.2} = 11.483$

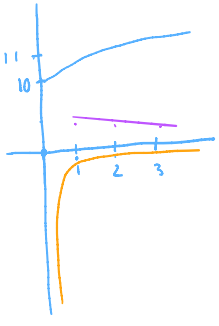
$\Delta y = 11.483 - 11.41 = 0.692$

Homework

- Find 2nd order derivative of $y = 10 + \sqrt{x}$ and plot the graph of y and $\frac{dy}{dx}$.
- Is the slope or slope a constant?

(1) $y = 10 + \sqrt{x}$

X	y	$\frac{1}{2}x^{-\frac{1}{2}}$	$-\frac{1}{4}x^{-\frac{3}{2}}$	$\frac{1}{4\sqrt{x^3}}$
0	10		undifi	
1	11	y_2	-0.25	
2	11.414	0.35	-0.088	
3	11.732	0.298	-0.098	



(2) yes is constant