

Used to solve equations of the form $f(x)=0$, where $f(x)$ is differentiable

- 1- Start with initial guess x_i
- 2- Find tangent line to f at x_i
- 3- $x_{i+1} = x_i - \frac{f(x_i)}{f'(x_i)}$
- 4- Repeat until the solution is accurate enough.

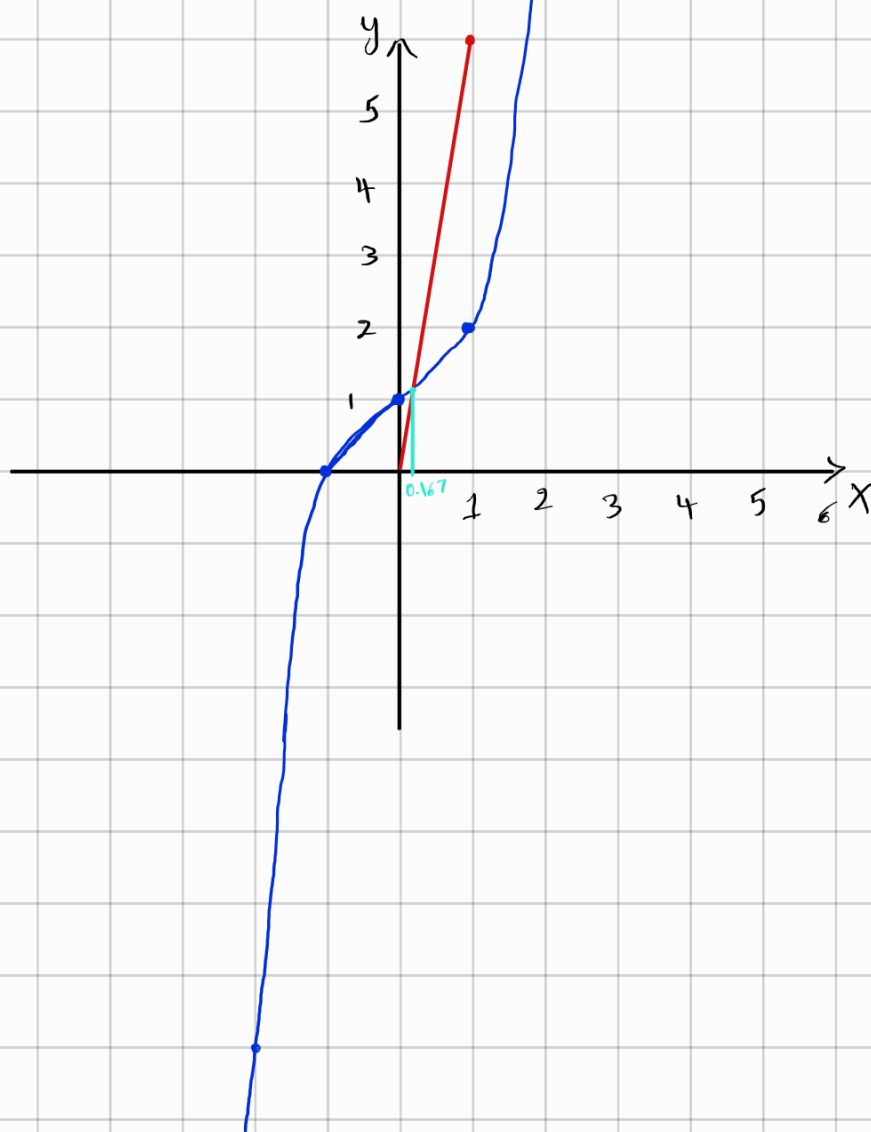
Example $x^3 + 1 = 6x$

$$f(x) = x^3 - 6x + 1 = 0$$

$$f'(x) = 3x^2 - 6$$

to guess x_i ,

we could draw a graph of $x^3 + 1$, & $6x$



i	x_i	$f(x_i)$	$f'(x_i)$	$f(x_i)/f'(x_i)$
1	0.167	0.00265	-5.91633	-0.00045
2	0.1674491740069385	$1.047102567 \times 10^{-7}$	-5.9155923223732	$-1.710159536 \times 10^{-8}$
3	0.16744919110853515	$1.1102230246251865 \times 10^{-16}$	-5.915592325191252	$-1.8766520693016785 \times 10^{-17}$
4				
5				