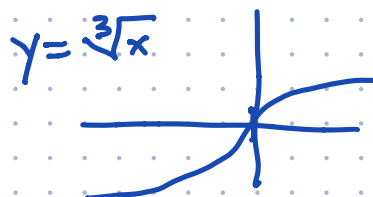


Existence of Derivatives

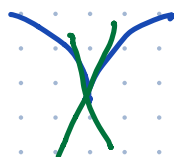
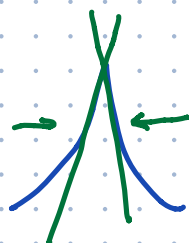
Critical points $\left\{ \begin{array}{l} f'(x)=0 \text{ Stationary points} \\ f'(x) \text{ DNE (Does not exist)} \end{array} \right.$

m_{tan} DNE $\left\{ \begin{array}{l} \text{no tangent line} \\ \text{slope doesn't exist} \end{array} \right.$

slope undefined



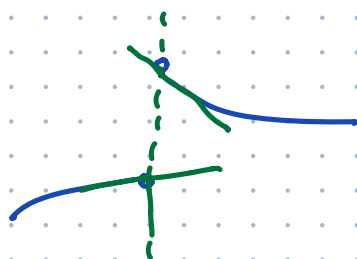
②



No unique tangent line

$$y = x^{1/2}(x-1)^2$$

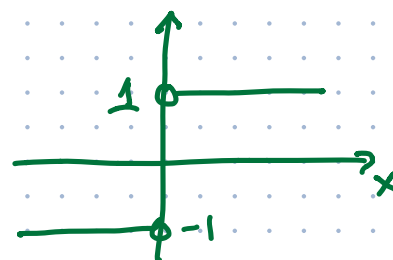
③



$$y = \frac{x}{|x|}$$

$$\frac{5}{|5|} = 1$$

$$\frac{-5}{|-5|} = -1$$



Watch for $\div$ by 0 in $f'(x)$.