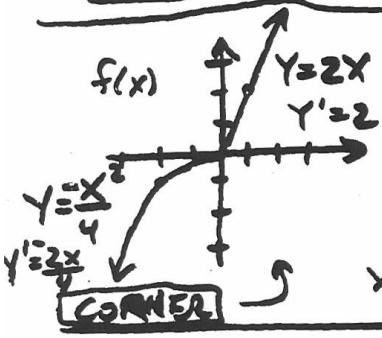
3.2 DIFFERENTIABILITY

$f(x)$ IS SAID TO BE DIFFERENTIABLE AT C IF $\lim_{x \to c^-} f'(x) = \lim_{x \to c^+} f'(x)$ AND IS FINITE

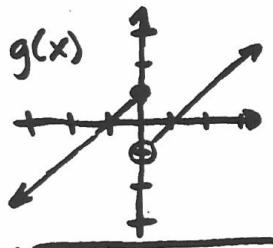
(THE TANGENT SLOPES ARE EQUAL BEFORE AND AFTER C.)

AND $f(x)$ IS CONTINUOUS AT C.



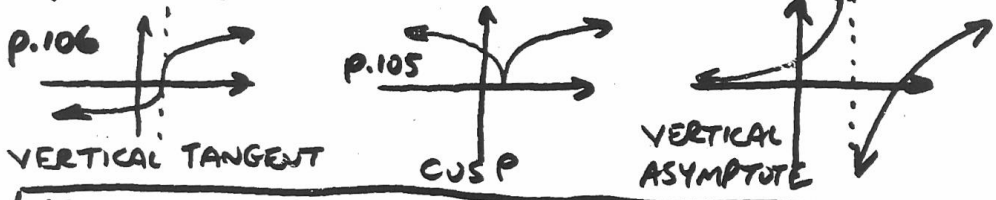
$f(x)$ IS NOT DIFFERENTIABLE AT $X=0$, BECAUSE THE DERIVATIVE CHANGES ABRUPTLY.

$\lim_{x \to 0^-} f'(x) = 0 \qquad \lim_{x \to 0^+} f'(x) = 2 \qquad 0 \neq 2$



$g(x)$ IS NOT DIFFERENTIABLE AT $X=0$ BECAUSE $g(x)$ IS NOT CONTINUOUS.

FUNCTIONS ARE NOT DIFFERENTIABLE IN THE FOLLOWING CASES ALSO.



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