

6. What kind IP? Use 2nd derivative test.
ie evaluate $f''(x)$ at x_c where $f'(x_c) = 0$

If $f''(x_c) \begin{cases} (+) \Rightarrow \text{Rel. Min (Hdd's H}_2\text{O)} \\ (-) \Rightarrow \text{Rel Max (Mark letter A)} \\ 0 \Rightarrow \text{Can't tell from } f''(x), \\ \text{must then use the} \\ \text{First Derivative Test.} \end{cases}$

Notes: The first derivative test is actually part of the 2nd derivative test when $f''(x_c) = 0$

Notes: Everytime you take the derivative, some information about the original function may be lost. This is why the f' -test can still work when f'' -test fails.

What kind CP at $x_c = 1$?

$$f''(1) = \frac{2 \overset{(-)}{(1-2)}}{\underset{(+)}{(1+1)^4}} = \frac{(-)}{(+)} = (-) \Rightarrow \text{Rel Max}$$

so CP: $(1, \frac{1}{4})$ is a Rel Max

Always put a box around results that you will need later for your graph.