

7. IPs Solve $f''(x)=0$ and check sign of $f''(x)$ on left and right.

$$f''(x) = \frac{2(x-2)}{(1+x)^4} = 0 \Rightarrow \text{Numerator} = 0 \text{ and Denominator} \neq 0$$

$\Rightarrow$ Solve numerator $= 0$

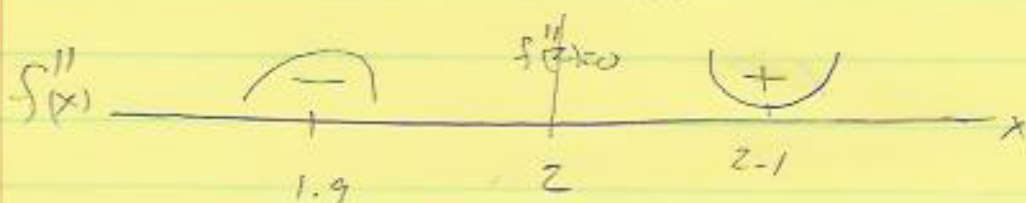
$$2(x-2) = 0$$

$x=2$ is possible location of IP

Check left $f''(1.9) = \frac{2(1.9-2)}{(1+1.9)^4} = \frac{(-)}{(+)} = (-)$ down

$$f''(2) = 0$$

right $f''(2.1) = \frac{2(2.1-2)}{(1+2.1)^4} = \frac{(+)}{(+)} = (+)$ up



Concavity Changes across $x=2$ where $f''(2)=0$

So there is an IP at $x=2$

Here is the IP

$$\boxed{\text{IP } (2, f(2)) = (2, \frac{2}{9})}$$

$$f(2) = \frac{2}{(1+2)^2} = \frac{2}{3^2} = \frac{2}{9}$$

(6)