$$f(x) = \begin{cases} \tan^{-1}x & : \; -1 \le x \le 1 \\ \frac{\pi}{4}\,\mathrm{sgn}(x) + \frac{(x-1)}{2} & : \; x > 1 \end{cases}$$

We know, for $x > 1$, $\mathrm{sgn}(x) = 1$

So,

$$f(x) = \begin{cases} \tan^{-1}x & -1 \le x \le 1 \\ \frac{\pi}{4} + \frac{(x-1)}{2} & x > 1 \end{cases}$$

Now to check differentiability at $x=1$

R.H.D $\quad \lim_{h \to 0} \frac{f(1+h) - f(1)}{h} = \frac{\cancel{\frac{\pi}{4}} + \frac{h}{2} - \cancel{\frac{\pi}{4}}}{h} = \boxed{\frac{1}{2}}$

L.H.D $\quad \lim_{h \to 0} \frac{f(1-h) - f(1)}{-h} = \frac{\frac{\pi}{4} + \left(-\frac{h}{2}\right) - \frac{\pi}{4}}{-h} = \boxed{\frac{1}{2}}$

(R.H.D = L.H.D)

$\Rightarrow$ $f(x)$ is diff. at $x=1$

$\Rightarrow$ $f(x)$ is cont. at $x=1$ [every diff. function is continuous]