MATA31 TUT000

Quiz4 on (A7 & A 8) **Mark:_____/25**

Last Name:_____ **First Name:_____** **Student #:_____**

1. [3 points] Use the definition of derivative to evaluate the derivative of

$$f(x)=\begin{cases}\sqrt{x-1}, & x>1\\ x, & x\le 1\end{cases}$$

on $(1,\infty)$ $f'(x)=\lim_{h\to 0}\dfrac{\sqrt{x+h-1}-\sqrt{x-1}}{h}=\lim_{h\to 0}\dfrac{(\sqrt{x+h-1}-\sqrt{x-1})(\sqrt{x+h-1}+\sqrt{x-1})}{h(\sqrt{x+h-1}+\sqrt{x-1})}=$

$=\lim_{h\to 0}\dfrac{x+h-1-(x-1)}{h(\sqrt{x+h-1}+\sqrt{x-1})}=\dfrac{1}{2\sqrt{x-1}}$; $f'(1^+)=\infty$

on $(-\infty,1]$ $f'(x)=\lim_{h\to 0}\dfrac{x+h-x}{h}=1$