

Math 1121

Homework #5

#20 bc, #39

#20 bc

$$f(x) = \begin{cases} x-1 & \text{if } x < 1 \\ 0 & \text{if } 1 \leq x \leq 4 \\ x-2 & \text{if } x > 4 \end{cases}$$

$$\begin{aligned} \lim_{x \rightarrow 1^-} f(x) &= 1-1 = 0 \\ \lim_{x \rightarrow 1^+} f(x) &= 0 \end{aligned}$$

same! it is continuous at $x=1$

$$\begin{aligned} \lim_{x \rightarrow 4^-} f(x) &= 0 \\ \lim_{x \rightarrow 4^+} x-2 &= 4-2 = 2 \end{aligned}$$

different it is discontinuous at $x=4$

#39 .98 for first oz, .21 for each additional

$$f(x) = \begin{cases} .98 & \text{if } x \leq 1 \\ .98 + .21(x-1) & \text{if } 1 < x \leq 13 \end{cases}$$

↑ first oz ↑ each additional oz