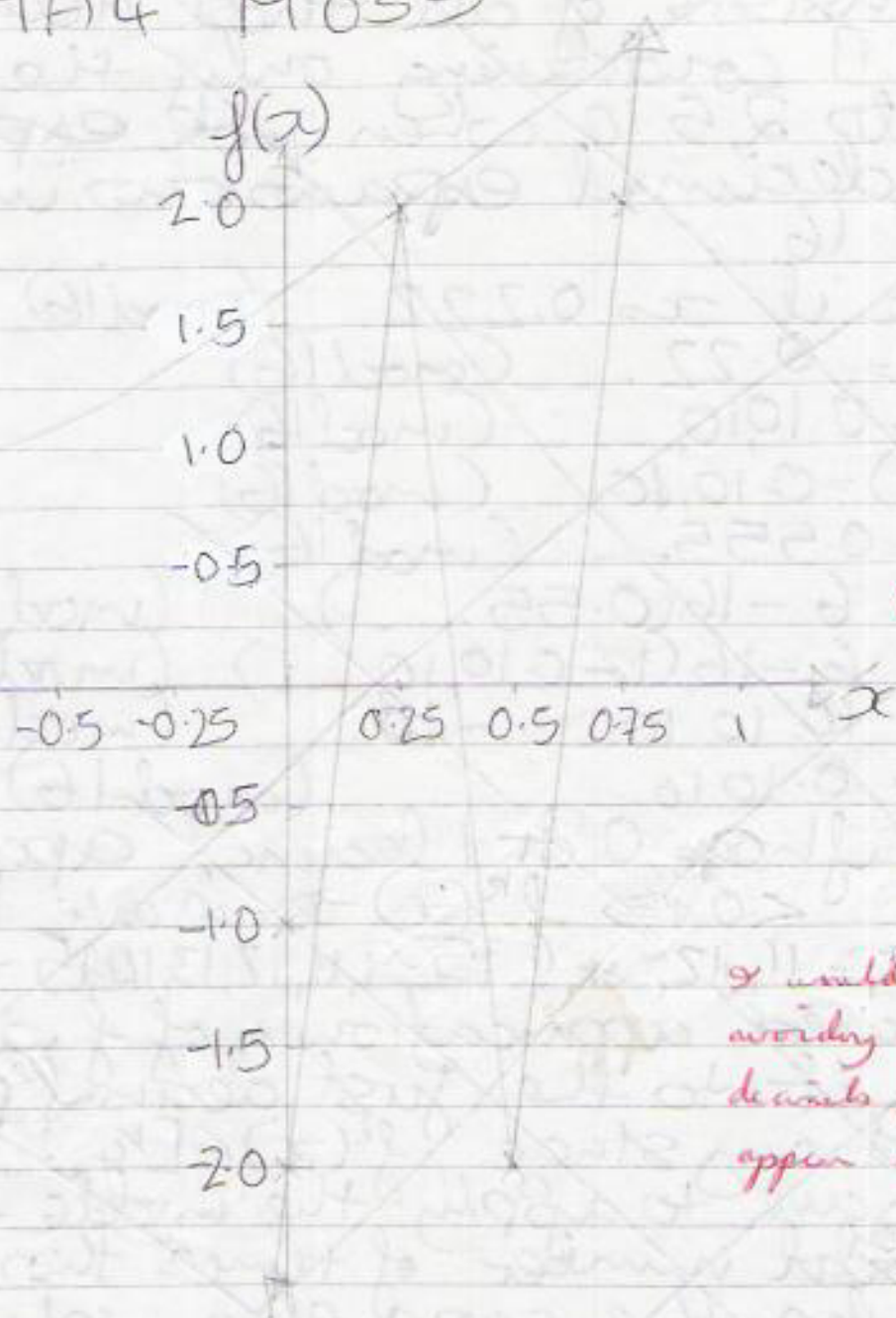


# TMA4 M835

1) a)



I would advise avoiding the use of decimals, unless they appear in the question.

$f(x) = 0$  at  $x = 0.125$  (the soln to  $16x - 2 = 0$ )  
 $x = 0.375$  (soln to  $-16x + 6 = 0$ )  
 $x = 0.625$  (soln to  $16x - 10 = 0$ )

$f(x)$  has a local max at  $x = 0.25$  when  $f(x) = 2$ , and a local min at  $x = 0.5$ , when  $x = -2$

From the graph  $\Rightarrow$  there are 3 distinct branches of  $f^{-1}$  defined on  $[0, 1]$

b) Let  $S_1(x) = \frac{x}{16} + \frac{1}{8}$

$S_2(x) = \frac{3}{8} - \frac{x}{16}$