Mathematics 122

Quiz #9 Name: Key

You must show your work to get full credit.

1. Let h be given by the table

$\Delta x =$ .2 .2 .2

x	1.0	1.2	1.4	1.6
$h(x)$	5.3	5.7	6.7	8.5

$\Delta h =$ .4 1.0 1.8

Complete the following table for the approximate values of the derivative.

x	1.1	1.3	1.5
$h'(x)$	2	5	9

at 1.1 $\frac{\Delta h}{\Delta x} = \frac{.4}{.2} = 2$

at 1.3 $\frac{\Delta h}{\Delta x} = \frac{1.0}{.2} = 5$

at 1.5 $\frac{\Delta h}{\Delta x} = \frac{1.8}{.2} = 9$

2. Let $f(x)$ satisfy $f(10) = 6$ and $f'(10) = 0.4$ Then estimate the following

$f(x) \approx f(a) + f'(a)(x-a)$

In this case

$a = 10$

$f(10) = 6$

$f'(10) = .4$

$f(10.2) \approx$ 6.08

$f(9.7) \approx$ 5.88

when $x = 10.2$ we get

$f(10.2) \approx 6 + (.4)(.2) = 6.08$

when $x = 9.7$ we get

$f(9.7) \approx 6 + (.4)(-.3) = 5.88$