

Mathematics 122

Quiz #13

Name: Key

You must show your work to get full credit.

(1) If $f(5) = 9$ and $f'(5) = -0.3$, estimate $f(4.8)$.

$$\begin{aligned} f(4.8) &\approx f(5) + f'(5)\Delta x & f(4.8) &\approx \underline{9.06} \\ &= 9 + (-0.3)(-0.2) & (\Delta x = 4.8 - 5.0 = -0.2) \\ &= 9 + 0.06 \end{aligned}$$

(2) A function h is given by the table

t	2.0	2.2	2.4
$h(t)$	45.6	45.9	46.5

Estimate $h(2.32)$

$$h(2.32) \approx \underline{46.26}$$

(*) $h(2.32) \approx h(2.2) + h'(2.2)\Delta x$

$$\begin{aligned} h(2.2) &= 45.9 \\ \Delta x &= 2.32 - 2.2 = 0.12 \\ h'(2.2) &\approx \frac{\Delta h}{\Delta x} = \frac{46.5 - 45.9}{2.4 - 2.2} = 3.0 \end{aligned}$$

Use those in (*)

$$\begin{aligned} h(2.32) &\approx 45.9 + (3.0)(0.12) \\ &= 46.26 \end{aligned}$$