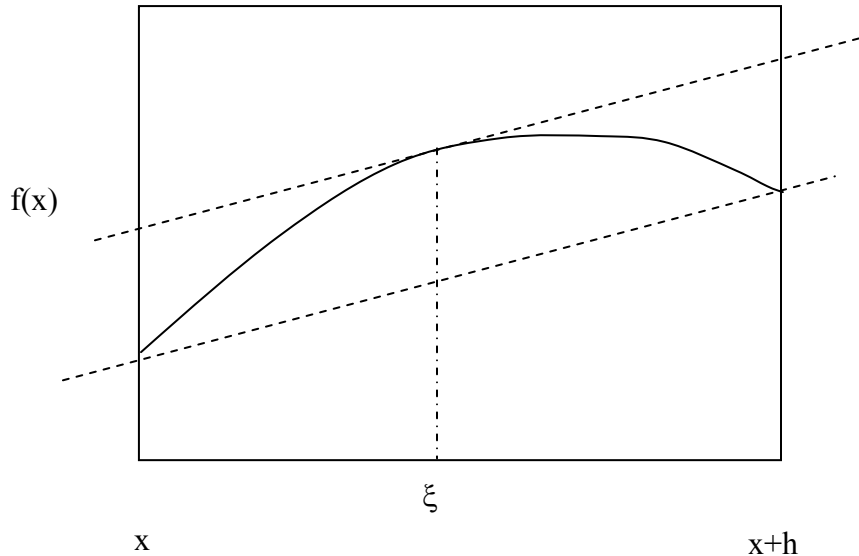


Taylor Series and the Mean Value Theorem

Hour Exam 2001F

4. Indicate on the sketch below where the value of ξ lies that satisfies the Mean Value Theorem of Derivatives.



The value of x where the slope is $\frac{f(x+h) - f(x)}{\Delta x}$

Final 2002F

2. Mark the location of ξ according to the Mean Value Theorem of Derivatives

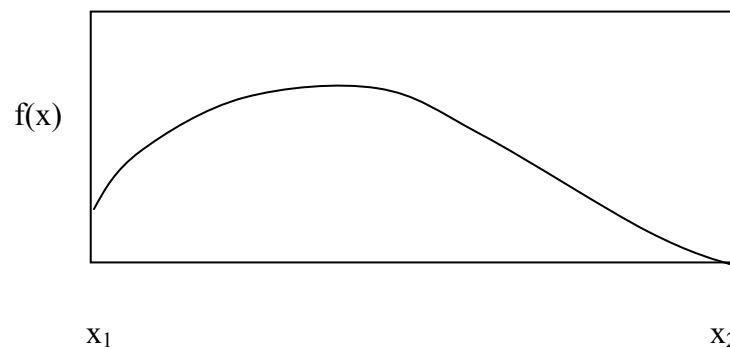


Figure 1. $f(x)$ vs. x

- 3 For $f(x) = 2x^3 + 3x^2 - 5$
- Write the first order Taylor Series approximation in terms of x and h for the above function.
 - What is the value of ξ that makes the first order approximation exact when $x = 1$ and $h=0.5$?

Final 2005S

- Describe the Mean Value Theorem of Derivatives in 25 words or fewer. Use a sketch.
- Use Taylor Series approximation to
 - Derive a forward approximation of the first derivative.
 - Show by formal mathematics the order of the error of the above approximation.

Final 2005F

- Describe the Mean Value Theorem of Derivatives in 25 words or fewer. Use a sketch.
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