Calc BC Section 4.2

Mean Value Theorem

Find all of the extreme value and where they occur for:

a) $f(x) = x^2 - 2x + 4$

b) $g(x) = x^3 - 3x^2 + 3x - 2$

c) $h(x) = \dfrac{x+1}{x^2+2x+2}$

Mean Value Theorem

If a function is continuous on $[a, b]$, and different at each point c on that interval then at least one derivative must equal the average rate of change:

$$f'(c) = \frac{f(b) - f(a)}{b - a}$$

Example 1 Show that the mean value theorem applies to $f(x) = x^3$ on $[1, 3]$. Then find the c guaranteed by the M.V.T.