MATH 2554 : 4.1 Review Sheet

Key Concepts

4.1 Maxima and Minima :

Extreme Value Theorem : A function that is continuous on a closed interval [a,b] has an absolute maximum value and an absolute minimum value on that interval.

Local Maximum and Minimum Value : Suppose c is an interior point of some interval I on whih f is defined. If $f(c)f(x)$ for all x in I, then $f'(c)$ is a local minimum value of f. These values (in fact all extremas) occur at **critical points**, which is when an interior point c of the domain f at which $f'(c) = 0$. However not all critical point are extrema...

Finding absolute extrema on an interval :

1. Find the critical points
2. Plug in endpoints and critical points into $f(x)$ and rank them

If there and ties, **both** x values are considered points at which the absolute maxima occurs. Your answer should look something like "Absolute (max/min) of $f(c)$ occurs at $x = c$" where $f(c)$ is a numerical value and c is/are the value/s at which the extrema occurs.