# Calculus AB

3-1

Extrema on an Interval

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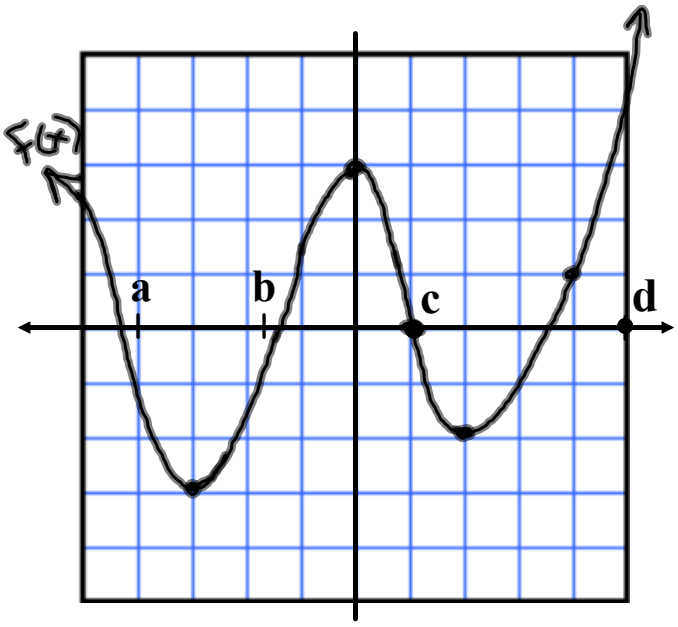
Extrema-

| | min | max |
|---|---|---|
| [a,b] | | |
| [b,c] | | |
| [c,d] | | |
| [a,c] | | |
| [b,d] | | |
| [a,d] | | |
| (a,b) | | |
| (b,c) | | |
| (c,d) | | |
| (a,d) | | |
| all Reals | | |

Compare relative vs. absolute extrema




Extreme Value Theorem-

Critical Point-

Theorem-

Find any critical numbers of the function. (pg 169)

12) $g(x) = x^4 - 4x^2$

| Assignment: |
| --- |
| Pg. 169 |
| 11-35 odd, |
| 39, 41, 43, |
| 54, 57-60 |

Locate the absolute extrema of the function on the closed interval.

20) $h(x) = -x^2 + 3x - 5$, on $[-2, 1]$

34) $f(x) = \tan\left(\frac{\pi x}{8}\right)$, on $[0, 2]$

61) The formula for the power output $P$ of a battery is $P = VI - RI^2$ where V is the electromotive force in volts, $R$ is the resistance, and $I$ is the current. Find the current (measured in amperes) that corresponds to a maximum value of $P$ in a battery for which $V = 12$ volts and $R = 0.5$ ohms. Assume that a 15-amp fuse bounds the output in the interval for $I$ of [0,15]. Could the power output be increased by replacing the 15-amp fuse with a 20 amp fuse?