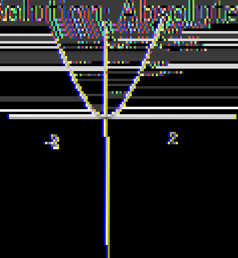
MAXIMA AND MINIMA

Absolute Maximum: Let f be defined on an interval I and [redacted]

Example: Locate the absolute and local maximum and minimum values based on the pictures [redacted]



Solution: Absolute maximum at x = -2 and x = 2

Absolute and local minimum: at x = 0

No local maximum.

and there exists a point c ∈ I (domain of f), then c

Critical Points: Let f be defined on an interval I, [redacted]

[redacted]

(510) 885-3674
www.csueastbay.edu/scaa
scaa@csueastbay.edu

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[redacted]

b.) $g(x) = x^{2/3}(2-x)$ on the interval [-1,2]

Solution:

a.) We know that f is a polynomial, thus it's derivative exists everywhere. Now let's find the critical

Solving this equation gives us two critical points: $x = 0$ and $x = 3/2$ and both of these points are

[redacted]

b.) Given $g(x) = x^{2/3}(2-x) = 2x^{2/3} - x^{5/3}$. Now to find the critical points we will differentiate the

So, $g'(x) = 0 \Rightarrow 4 - 5x = 0 \Rightarrow x = \frac{4}{5}$. Thus we have two critical points: $x = 0$ and $x = \frac{4}{5}$. Now we will check the values of the function at the critical points and the end points,

$g(-1) = 3$, $g(0) = 0$, $g(4/5) = 1.03$ *and* $g(2) = 0$. Thus we see that the function attains the largest value at $x = -1$ and the smallest at $x = 0$ and $x = 2$.

Therefore, absolute maximum of g on [-1,2] is 3 and absolute minimum of g on [-1,2] is 0.

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