

Math 241: HW 11

Due on Friday, October 11

Fall '13

John "Curlee" Robertson

Problem 1

Let $g(x) = x^2\sqrt{5-x}$. Note that the domain of $g(x)$ is the interval $(-\infty, 5]$. Find the critical points of g , the intervals where g is increasing/decreasing. Use the first derivative test to decide if g has any local min/max values and give the value of g at these points. QUESTION FOR PONDERING: Are any of these local min/max values global min/max values?

Problem 2

Let $f(x) = x^{2/3}(x^2 - 4)$. Find the critical points of f , the intervals where f is increasing/decreasing. Use the first derivative test to decide if f has any local min/max values and give the value of f at these points.

Problem 3

Use the Mean Value Theorem to prove that

$$|\sin(x) - \sin(y)| \leq |x - y|$$

for any $x, y \in \mathbb{R}$.