

Take-home quiz on Extrema and Mean-Value Theorem

1. Consider the function $f(x) = x(x - 4)^{\frac{2}{3}}$.

Find the minimum and maximum value of f on the interval $[1, 5]$. Show all work and find all critical values by hand, but you may use a calculator to compute y-values.

2. Verify that $f(x) = \frac{x}{x+2}$ satisfies the hypotheses of the Mean Value Theorem on the interval $[1, 4]$.
Then find all numbers c that satisfy the conclusion of the Mean Value Theorem.

3. $\frac{d}{dx}[(\cos x)^{\arctan x}] =$