1. (4 points) Find the points of absolute extrema for

$$f(x) = x(x-8)^{\frac{1}{3}}, \ \ 0 \le x \le 9$$

2. (3 points) Find the value c that satisfies mean value theorem to the function

$$f(x) = x^{\frac{2}{3}}, \quad x \in [1, 8]$$

3. (3 points) Show that

$$|\cos(x) - \cos(y)| \leq |x - y|, \quad \forall x, y \in \mathbb{R}$$