

Quiz There

Show all work. No credit for final answer only. Attach papers if needed. You have 20 mins.

1. (*4 points*) Write down the definition of **critical value (critical point)**.

2. (*5 points*) For function

$$f(x) = \sqrt{2x + 1},$$

specify the domain and find critical value(s), if there exists.

3. (6 points) For function

$$f(x) = \frac{x^3}{3} - \frac{x^2}{2} - 6x + 2,$$

specify the interval in which the graph increases, decreases, concave up and concave down. Finally, sketch the graph.

4. (5 points) An open-top box is made from a 12-inch by 12-inch piece of cardboard by cutting identical squares from the corners and then folding up the flaps. Determine the dimension of the box of maximum volume.