

Analysis 1, Summer 2024
Written Assignment 2

You must show your work for every task.

1. At $x = \frac{\pi}{3}$, is the function

$$\sqrt{\cos(x)} - \sqrt{\cos\left(\frac{\pi}{3}\right)}$$

increasing, decreasing, or neither? **Originally this task used π instead of $\frac{\pi}{3}$, which was a mistake.**

2. Find the critical point(s) of $f(x) = (x - 4) \cdot \sqrt[3]{x^2}$.

3. Find and classify the critical point(s) of

$$f(x) = x^3 - 12x^2 + 36x - 25.$$

You may use either the First Derivative Test or the Second Derivative Test.

4. Find the inflection point(s) of $f(x) = x^4 + \frac{4}{3}x^3 - 32x^2 + 80x + \frac{2}{9}$.