Math 131 - Assignment 9

April 3, 2024

Name _____

Score _____

Show all work to receive full credit. Supply explanations when necessary. Use extra paper as necessary. This assignment is due April 10.

1. Find the absolute maximum and minimum values of $h(x) = x^3 - 3x^2 + 1$ on $[-1/2, 4]$.

2. Find the critical numbers of $f(x) = x^4 + 4x^3 - 36x^2$.

3. Find the absolute extreme values of $f(x) = x - 2\sin x$ on $[-2, 3]$.

4. Find all critical numbers of $f(x) = 5x^{3/7} - 2x^{10/7}$.
   (Helpful hint: Simplify your derivative by factoring out $x^{-4/7}$.)

5. Find open intervals on which the graph of $f(x) = 2x^4 - 16x^2 + 3$ is
   increasing/decreasing. Also identify all relative extreme values.

6. Let $f(x) = x - 2\sin x$ on $[-2, 3]$. Find open intervals on which the graph of f is
   increasing/decreasing. Also identify all relative extreme values.

7. Let $g(x) = x^4 + \cos(20x)$. Without looking at the graph of g, determine whether the graph is concave up or concave down at the point where $x = 0.7$.

8. Let $f(x) = (x - 6)^3(x - 2)$. Find $f''(x)$ and write it in factored form. Then find open intervals on which the graph of f is concave up/down. Identify all points of inflection of the graph of f.