

Show all your work. Due Marth 24th, 2017.

Name:

Student ID:

1. **(Partition Numbers and Critical Values)** Find the partition numbers and critical values of the function $f(x) = 8 \ln(x) - x^2$.

2. **(Local Extrema)** Given $f(x) = x^3 - 9x^2 + 24x - 10$, find

- (a) Find the critical values of f .
- (b) Find the local maxima and minima.
- (c) Sketch a graph of f .

3. **(Absolute Extrema On Closed Intervals)** Let $f(x) = \frac{3}{2}x - 5$, $-2 \leq x \leq 3$. Answer the following questions:

(a) Find the absolute maximum and minimum values of $f(x)$.

(b) Graph $f(x)$.

(c) Identify the points on the graph where the absolute maximum and minimum occurs and include their coordinates.

4. **(Absolute Extrema On Closed Intervals)** Let $f(x) = -\frac{1}{x^2}$, $0.5 \leq x \leq 2$. Answer the following questions:

(a) Find the absolute maximum and minimum values of $f(x)$.

(b) Graph $f(x)$.

(c) Identify the points on the graph where the absolute maximum and minimum occurs and include their coordinates.