Math 1300-001, Quiz 7 Name: _____

Let $f(x) = \dfrac{\ln x}{x^2}$.

1. Some basic properties of f:
   (a) What is the domain of f?
   (b) For what values of x is $f(x) = 0$?
   (c) What is $\lim_{x \to 0^+} f(x)$?
   (d) What is $\lim_{x \to \infty} f(x)$? (Use l'Hôpital's rule.)
2. Find the first and second derivatives of f with respect to x.
3. What are the critical numbers of f? Of f'? [Recall that a critical number of a function $g(x)$ is a value of x in the domain of g for which $g'(x)$ is either zero or does not exist.]

4. List the intervals on which f is increasing/decreasing/concave up/concave down. [You may use either a number line or interval notation.]

5. List any local extrema of f and the values of x at which they occur.

6. List any inflection points for the graph of f.

7. Sketch the graph of f using the above information, labeling local extrema and inflection points.