You may work with other MATH 220 students. However each student should write up solutions separately and independently – nobody should copy someone else’s work.

You may use your notes or the textbook.

Computers are not allowed on any problem. You may use a calculator only for basic arithmetic.

The quiz should be submitted to Mr. Murphy at the beginning of your official lecture period on Friday, October 19th.

There is a higher expectation for the quality of your work on a take-home quiz. Everything should be written logically and legibly with sufficient work to justify each answer. Blank copies of the quiz are available on the course home page.

Be sure that the pages are nicely stapled – do not just fold the corners.

Note to TAs and Tutors – you should not help students with these specific problems or go over solutions until after 5pm Friday.
1. (3 points) Evaluate $\lim_{x \to 0} (1 - 5x)^{8/x}$
2. (4 points) Suppose that \( f(x) \) is a function whose first derivative is given below.

\[
f'(x) = \frac{2e^x (x^2 + 25) (x^2 - 16)(x - 3)^8}{\ln (x^2 + 100)}
\]

Find all critical numbers of \( f(x) \). At each critical number, state whether \( f(x) \) has a local maximum, local minimum or neither at that point.
3. (3 points) Suppose that point $A$ has coordinates $(0, 6)$, point $B$ has coordinates $(0, -6)$, and point $C$ has coordinates $(8, 0)$. Determine the coordinates for the point $P$ on the $x$-axis for which the sum of the distances from $P$ to each of the three points $A$, $B$ and $C$ is as small as possible.