Math 1271 Quiz 2

1. (*35 points*)Evaluate the following limit

$$\lim_{x \to 9} \frac{3 - \sqrt{x}}{9x - x^2}$$

2. (*15 points*) State whether the following statement is true or false:

$$\lim_{x \to \pi} \sin(x + \sin(x)) = \frac{\sqrt{3}}{2}.$$

3. (*15 points*) State whether the following statement is true or false:

The following function

$$f(x) = \begin{cases} \sin(x) & \text{if } x < \frac{\pi}{4}; \\ \cos(x) & \text{if } x \geq \frac{\pi}{4}; \end{cases}$$

is continuous on $(-\infty, \infty)$.

PLEASE SEE THE OTHER SIDE FOR MORE PROBLEMS.

4. (*35 points*) Evaluate the following limit.

$$\lim_{x \to 0^-} \left(\frac{1}{x} - \frac{1}{|x|} \right).$$