Quiz 3 **Your name:**

Your TA's name:

1. [10 points] Find the limit, probably infinite, if it exists. If the limit does not exist explain why.

$$\lim_{x \to 1^-} e^{\frac{5}{x-1}}$$

2. [10 points] Find the limit. Use l'Hospital's Rule if it is appropriate. Explain why you applied or could not apply l'Hospital's Rule.

$$\lim_{x \to 1} \frac{x^a - 1}{x^b - 1}$$

3. [10 points] Use logarithmic differentiation to find y' if $y = x^{\cos x}$.

4. [10 points] Find $(f^{-1})'(a)$ if $f(x) = x^2 + 1$ and $a = 1$.