Lecture time: 12 pm **Quiz 5** Quiz time limit: 20 min.

Spring 2015 **Your name:** _____

Math 0220 **Your TA's name:** _____

No calculators, no notes, no books are permitted. L'Hospital's rule is not allowed.

SHOW ALL WORK (no work = no credit). Write neatly. Simplify your answers.

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1. Find the limit, if it exists. If the limit does not exist explain why. You may use the L'Hospital's Rule.

(a) [2 points] $\lim_{t\to 0} \dfrac{3t + e^{-3t} - 1}{t^2}$

(b) [3 points] $\lim_{x\to 0} (1 - 3x)^{\frac{2}{x}}$

2. [5 points] Find the absolute maximum and absolute minimum values of the function $f(t) = 2\sin t + \cos 2t$ when $0 \leq t \leq \frac{3\pi}{4}$. Provide complete proof of your solution.

bonus problem [5 points extra] Suppose that $f(0) = -3$ and $f'(x) \leq 5$ for all x. How large can $f(2)$ possibly be?