PRINT Your Name:____________________

Quiz for September 15, 2005

Find $\lim_{x\to 0^-}(1-2x)^{\frac{3}{x}}$. Explain carefully which facts you are using.

ANSWER: Let $t=\frac{-1}{x}$. The problem is equal to

$$\lim_{t\to+\infty}\left(1+\frac{2}{t}\right)^{-3t}=\left(\lim_{t\to+\infty}\left(1+\frac{2}{t}\right)^{t}\right)^{-3}.$$

We saw in class that $\lim_{t\to\infty}(1+\frac{r}{t})^t=e^r$. The answer to our problem is

$$(e^2)^{-3}=\boxed{e^{-6}}.$$