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

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