

### MATH 112-04 QUIZ 3

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**Problem 1.** Evaluate the following limits

$$(a) \quad \lim_{x \rightarrow 1^+} \left( \frac{1}{x-1} - \frac{1}{\ln x} \right), \quad (b) \quad \lim_{x \rightarrow +\infty} (\ln x)^{1/(\ln x)^2}.$$

**Problem 2.** Let  $g(x) = \int_{-1}^x \frac{3dt}{4t^2 + 4t + 4}$  and  $f(x) = \sec^{-1}(2g(x))$ . Find  $g(0)$  and  $f'(0)$ .