

# Suggested Homework for Lecture 9

Math 116

(1) Evaluate the indicated limit.

$$(1a) \lim_{x \rightarrow 0} \frac{x^2 - x}{e^x - 1}$$

$$(1b) \lim_{x \rightarrow 1} \frac{x^2 - x}{e^x}$$

$$(1c) \lim_{x \rightarrow 1} \frac{\ln(x)}{x^4 - 1}$$

$$(1d) \lim_{x \rightarrow 2} \frac{x^2 - x - 2}{e^x - e^2}$$

$$(1e) \lim_{x \rightarrow 0} \frac{x}{e^x}$$

$$(1f) \lim_{x \rightarrow 1} \frac{x^2 + 1}{x + 1}$$

$$(1g) \lim_{x \rightarrow 0} \frac{x^3}{e^x - 1}$$

$$(1h) \lim_{x \rightarrow e} \frac{\ln(x) - 1}{x - e}$$

$$(1i) \lim_{x \rightarrow -1} \frac{x + 1}{x^2 + 1}$$

$$(1j) \lim_{x \rightarrow 1} \frac{x^2 - 1}{\ln(x)}$$

(2) Repeat problem (1) from HW assignment 3 using L'Hospital's rule rather than algebra.

# Answers to Suggested Homework for Lecture 9

Math 116

(1a)  $-1$

(1b)  $0$

(1c)  $\frac{1}{4}$

(1d)  $\frac{3}{e^2}$

(1e)  $0$

(1f)  $1$

(1g)  $0$

(1h)  $\frac{1}{e}$

(1i)  $0$

(1j)  $2$