Math 242: HW 4

Due on Wednesday, June 25

Summer '14

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Problem 1

Compute the following limits. Be sure to indicate the indeterminate type if you use L'Hopitals rule.

a) $\lim_{x\to 3} \frac{x-3}{x^2-9}$

b) $\lim_{x\to 0} \frac{\sqrt{5x+25}-5}{x}$

c) $\lim_{x\to \infty} \frac{4x^3+5x^2-x+1}{7x^3+x+3}$

d) $\lim_{x\to 5} \frac{x+2}{x-1}$

e) $\lim_{x\to \infty} \ln(2x) - \ln(x+1)$

f) $\lim_{x\to 1^+} \frac{1}{x-1} - \ln(x)$

g) $\lim_{x\to 0^+} x^x$

h) $\lim_{x\to 0^+} x\ln(x)$

i) $\lim_{x\to \infty} (\ln(x))^{\frac{1}{x}}$

j) **(Very Important)** Let $r \in \mathbb{R}$ be a constant. $\lim_{x\to 0^+} \left(1+\frac{r}{x}\right)^x$