Name: _____

Math 145, Fall 2002
H. Gavlas
100 pts.

Exam 1, Part I

This part of the exam is worth 34 points and **no calculators** are allowed. When you finish with Part I, come up to get Part II. To receive full credit, you **must** show all work!

1. (24 pts.) Find the following limits, if they exist. If a limit does not exist, give as much information about the limit as you can.

   (a) $\lim_{x\to 4} \dfrac{2x}{x-4} - \dfrac{8}{x-4}$

   (b) $\lim_{x\to 2} \dfrac{3x^2 - x - 10}{x^2 - x - 2}$

   (c) $\lim_{x\to \infty} \dfrac{3x^2 - x - 10}{x^2 - x - 2}$

   (d) $\lim_{r\to 4} \dfrac{\sqrt{r}}{(r-4)^2}$

   (e) $\lim_{t\to 0^+} \ln(t^2)$

(f) $\lim_{x \to \infty} e^{-5x}$

2. (10 pts.) Solve each equation algebraically. Give **exact** answers ($\sqrt{2}$ is exact, 1.414213 is not).

(a) $3^{2x+1} - 7 = 0$

(b) $\log_3 x - \log_3(x-1) = 1$