Statistics 592C, Problem Set 1

Wellner; 1/6/99

Reading: VdV&W, Sections 2.1 - 2.2, pages 80 - 106.
Due: Wednesday, January 13, 1999.

1. Correct line -2, page 95, Van der Vaart and Wellner (1996): show that if $p \le q$, then
$$\|X\|_{\psi_p} \le (\log 2)^{1/q - 1/p} \|X\|_{\psi_q}\,.$$

2. Show that the constant in line -1, page 95 of VdV and W can be taken to be $\Gamma(p+1)^{1/p}$.

3. Problem 2.3.3, page 120, VdV and W.

4. Problem 2.3.4, page 120, VdV and W.

5. Show that if X is a random variable which is weak - L_2 (i.e. $x^2 P(|X| > x) \to 0$ as $x \to \infty$), then $E|X|^r < \infty$ for all $r < 2$.