Set 5–due 6 October

"The climbing as a whole is not very esthetic or enjoyable; it is merely difficult."–Yvon Chouinard

1) Jackson 2.12 [15 points] Don't begin with (2.71) – take a solution with separate $\sin(n\phi)$ and $\cos(n\phi)$ coefficients.

2) Jackson 2.13 [20 points] (a)–15, (b)–5. For some psychological reason, I found it easier to do this problem measuring my angle from the intersection of the two potential values (i, e., $V = V_1$ for $0 < \phi < \pi$), then changing variables at the end to Jackson's convention.

3) Jackson 3.20 [20 points]. (a)–8 (b)–5 (c)–7. Omit all the discussion about 3.19. Just work this problem in cylindrical coordinates, and find the Dirichlet Green's function by beginning with

$$\delta(z - z') = \frac{2}{L} \sum_n \sin \frac{n\pi z}{L} \sin \frac{n\pi z'}{L} \tag{1}$$

and

$$\delta(\phi - \phi') = \frac{1}{2\pi} \sum_m \exp(im(\phi - \phi')) \tag{2}$$

(redoing the derivation on p. 125-126). In part (c) you will have to look up one integral over a Bessel function. Do you recall the reciprocity problem from Set 1?