Problem Set 3 — due May 5

1. Derive the strong coupling limit of the string tension for $SU(2)$, $K = -a^{-2}\ln(\beta/4)$.
2. Show for $SU(3)$ or $SO(3)$ that

$$\int dg\ g_{ij}\ g_{kl}\ g_{mn} = \frac{1}{3!}\epsilon_{ikm}\epsilon_{jln}.$$

3. Calculate the next nonvanishing term, X, in the strong coupling expansion of the $SU(3)$ glueball mass, via the plaquette-plaquette correlation function:

$$m_{glueball} \times a = -4\ln(b_3/3) + X + \ldots$$

Here b_3 is the triplet coefficient in the character expansion of the plaquette action.