

Answers to Problem Set 4 Physics 607 (Sept. 24, 2001)

1. Input file: (alk.in)

```
19
4  0 -0.15952
5  0 -0.06371
6  0 -0.03444
4  1 -0.10009
5  1 -0.04688
3  2 -0.06140
4  2 -0.03469
```

Output from mod_pot:

$$b = 0.484590, \quad \chi^2 = 3.6 \times 10^{-5}$$

$$E_{1s} = -146.188, \quad E_{\text{exp}} = -132.56$$

(NIST database gives $E_K = 3.607\text{E-}03 \text{ MeV} = 132.56 \text{ (a.u.)}$ for K-shell threshold for Potassium.)

2. For K, $Z = 19$, $N = 18$, we find $R = 2.9962$

