Economics 312 — Spring 2014
Daily Problem #6 — February 7

Suppose that you ran a quadratic regression of hourly wage on years of experience and years of experience squared got the following estimate shown in the Stata table below. (Note that this is a "multiple regression" involving two explanatory variables, experience and experience squared. We haven't studied these models yet, but they are not difficult.)

```
. reg wage exper exper2

      Source |       SS       df       MS              Number of obs =    4733
-------------+------------------------------           F(  2,  4730) =  161.43
       Model |  11674.0923     2  5837.04616           Prob > F      =  0.0000
    Residual |  171032.322  4730  36.1590533           R-squared     =  0.0639
-------------+------------------------------           Adj R-squared =  0.0635
       Total |  182706.415  4732   38.610823           Root MSE      =  6.0132

------------------------------------------------------------------------------
        wage |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
       exper |   .4434305   .0263969    16.80   0.000     .3916802    .4951808
      exper2 |  -.0087314    .000614   -14.22   0.000    -.0099351   -.0075278
       _cons |   6.043945   .2466821    24.50   0.000     5.560334    6.527557
------------------------------------------------------------------------------
```

Answer the questions below based on the estimates in the table. You may round coefficients to 2 or 3 significant digits to make your calculations simpler if you wish.

1. Write the estimated wage function in mathematical notation.
2. What is the expected annual hourly wage of someone with 20 years of experience?
3. What do we expect the annual *raise* in hourly wage to be for with 20 years of experience? (Evaluate the derivative of the wage function with respect to experience when *exper* = 20 rather than re-calculating the expected wage for 21 years and subtracting.)
4. What happens to the marginal effect of experience on wage, $d(wage)/d(exper)$, as workers get more experience? Is this realistic?
5. What is the estimated elasticity of the hourly wage with respect to experience at 20 years?