TA’S NAME:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Problem Set #7**

1. I have 5 cats. Below I have reported my cats’ ages and my cats’ level of cuteness, each measured as continuous variables. The age measure is expressed in years; the cuteness measure ranges from 0 (Ugly) to 10 (Insufferably Cute). For these data, **(a)** report the correlation between my cats’ ages and their level of cuteness; **(b)** compute the least squares prediction equation for the regression of level of cuteness on age; **(c)** compute the predicted value of level of cuteness for a 10 year old cat; **(d)** report and interpret the value of R2YX; **(e)** interpret the value of the intercept of the prediction equation; and **(f)** describe the strength and direction of the association between my cats’ ages and their levels of cuteness based on the results you have produced. **SHOW YOUR WORK**

CAT AGE (X) CUTENESS (Y)

Fluffy 1 9

Boots 12 3

Tabitha 7 4

Mr. Snookums 2 5

Snowball III 5 6

1. The General Social Survey asks people how much education they have completed (X) and it also includes a 10-item vocabulary test (Y). Here are the means and variances of X and Y, along with the correlation and sample size:

**N** = 21,638 ; **rYX** = 0.5

**Y-bar** = 5.996; **s2Y** = 4.688

**X-bar** = 12.795; **s2X** = 9.246

**(a)** compute the least squares prediction equation; **(b)** compute R2YX; **(c)** test the null hypothesis that 2YX equals zero in the population; **(d)** test the null hypothesis that YX equals zero in the population; and **(e)** test the null hypothesis that YX equals zero in the population. Use =0.05 for all hypothesis tests. *Show your work*.