Turn-in Sheet

My Name: ____________________________________

My Group: ____________________________________

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1. For OLS, $\rho(u_i) = u_i^2$. Calculate $\psi(u_i)$ and w_i.

2. For Huber estimation,

$$\begin{array}{ll} \rho(u_i) = u_i^2 & \text{if} \quad |u_i| \leq c \\ \rho(u_i) = c(2|u_i| - c) & \text{if} \quad |u_i| > c \end{array}$$

   (Assume c=1.345.) Calculate $\psi(u_i)$ and w_i. Intuitively, how will the regression coefficients change (from OLS) if we re-run the regression with these weights?

3. Interpret the sketches of the weight function vs. the residual for the above two weight functions (see plots on last page of handout).

4. Consider the data x=1, 2, 3, 4, 5, and y=7.384, 14.265, 11.490, 12.580, 15.442. Plot the data including your best guess for the regression line. Interpret the following where wn, rn and bn are the weights, the scaled residuals, and the coefficients for the n^{th} iteration of a robust regression based on the Huber weight function.

w1	r1	w2	r2	w3	r3	w4	r4
1	-1.84	0.73	-1.67	0.80	-1.16	1.00	-0.97
1	3.26	0.41	5.66	0.24	7.42	0.18	9.90
1	-0.70	1.00	-0.46	1.00	-0.16	1.00	0.03
1	-1.03	1.00	-1.19	1.00	-1.27	1.00	-1.54
1	0.30	1.00	0.54	1.00	0.59	1.00	0.70

	(Intercept)	x
b0	7.90	1.44
b1	7.90	1.44
b2	6.97	1.62
b3	6.32	1.75
b4	6.02	1.82