MATH 610 HW 1 Rubric

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1. Exercise 1 50 points

   (a) Problem 1 12 points

       i. 2 points for checking if $u \in L^2(-1, 1)$
       ii. 9 points for finding the weak derivative
       iii. 1 point for showing the weak derivative is in $L^2(-1, 1)$

   (b) Problem 2 12 points

       i. 1 point for covering the $\alpha = 0$ case
       ii. 1 point for finding $\alpha \neq 0$ such that $|x|^\alpha \in L^2(-1, 1)$
       iii. 10 points for finding $\alpha \neq 0$ such that $|x|^\alpha$ has a weak derivative in $L^2(-1, 1)$

   (c) Problem 3 13 points

       i. 10 points for giving a mostly correct proof with minor and fixable errors
       ii. 7 points for giving a proof that is incomplete, has serious errors, or is missing large steps in the argumentation

   (d) Problem 4 13 points

       i. 7 points for giving a proof that is incomplete, has serious errors, or is missing large steps in the argumentation
       ii. 10 points for giving a mostly correct proof with minor and fixable errors

2. Exercise 2 50 points

   (a) Problem 1 25 points

   (b) Problem 2 25 points

       i. 6 points for showing 1 inequality
       ii. 12 points for showing 2 inequalities
       iii. 18 points for showing 3 inequalities
       iv. 25 points for showing all inequalities