

KING FAHD UNIVERSITY OF PETROLEUM AND MINERALS  
DEPARTMENT OF MATHEMATICS AND STATISTICS  
Math 442 Homework 1

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Name:.....ID:.....

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Exercise #1: Write down the necessary conditions for the functional  $J[y_1, y_2] = \int_0^1 [y_1^2 + y_1' y_1 + y_1 y_2' + y_2^2] dx$  to have extremals satisfying  $y_1(0) = 0, y_1(1) = 1, y_2(0) = -1, y_2(1) = 2$ .