

# QUIZ-4<sup>th</sup>

日河工 2B

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- 1) Verify by implicit differentiation that the given equation implicitly defines a solution of the differential equation (20 scores)

$$y^2 + xy - 2x^2 - 3x - 2y = C ; \quad y - 4x - 3 + (x + 2y - 2)y' = 0$$

- 2) Consider  $y' = \frac{y}{x} + 1$  for all  $x > 0$  (80 scores)

- a) get the particular solution corresponding to the initial solution  $y(1)=0$  (30 scores)  
b) draw a direction field of the differential equation and the integral curve through  $(1, 0)$  *hint:*  $\ln(2) \cong 0.69$  (50 scores)