HOMEWORK #1 (Separable Variables, Linear Equations, Exact Differential equation)

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1. Find the general solution(perhaps implicitly defined).

   $x\sin(y)y' = \cos(y)$ Hint：use separable variables.

   (Page 20, Program 7)

2. Solve the initial value problem.

   $$y' + \frac{2}{x+1}y = 3\ ;\ y(0) = 5$$

   (Page 27, Program 17)

3. Determine where(if anywhere) in the plane the differential equation is exact. If it is exact, find a potential function and the general solution, perhaps implicitly defined. If the equation is not exact, do not attempt a solution at thin time

   $$4xy + 2x^2y + (2x^2 + 3y^2)y' = 0$$

   (Page 33, Program 3)