

## HOMEWORK #4 (M427K FALL 2004)

### 1. SOLVE DIFFERENTIAL EQUATION

$$(2x - 4y + 2)dx + (x - y)dy = 0$$

(hint: “kissing cousin” of the homogeneous equation. try substituting  $x = \bar{x} + h$  and  $y = \bar{y} + k$  to make it into a homogeneous equation. Then solve homogeneous equation as in Homework #2)

### 2. SOLVE DIFFERENTIAL EQUATION

$$(2x - 4y + 2)dx - (6x - 8y + 1)dy = 0$$

(hint: same as previous exercise)

### 3. SOLVE DIFFERENTIAL EQUATION

$$(x^2 + y)dx + (x + \sin y + e^y + 4^y)dy = 0$$

(hint: see if this takes the form  $\frac{\partial F}{\partial x} dx + \frac{\partial F}{\partial y} dy = 0$ , i.e. check for exactness. Do you remember how to do this? Remember  $\frac{\partial^2 F}{\partial x \partial y} = \frac{\partial^2 F}{\partial y \partial x}$ )