Math 231, fall 2008- lecture 2 homework

For the following equations: (i) find a 1-parameter family of solutions, including the ***intervals*** where the equation and the solution are valid. (ii) Try to discover particular solutions which are not members of the one-parameter family.

1. $yx^2dy - y^3dx = 2x^2dy$
2. $(y^2 - 1)dx - (2y + xy)dy = 0$
3. $dy + x(y + 1)dx = 0$

Find a particular solution satisfying the initial condition, including the interval where the solution is defined.

4. $dy = e^{x+y}dx, \quad y(0) = 0$
5. $(1 - x)dy = x(y + 1)dx, \quad y(0) = 0$