Supplementary problems on exact equations

For each of the problems below, perform all of these steps:

- Rewrite the equation in the form M(x, y)dx + N(x, y)dy = 0, if it is not already written that way. Then find $\partial M/\partial y$ and $\partial N/\partial x$; **circle** those two functions. If you've done your computations correctly, you'll find that those two functions are *not* equal; thus the given problem is *not* exact.
- Then multiply the given equation through by the given function $\mu(x, y)$. The resulting equation should be exact. Solve it, and circle your answer.
- (a) $ydx + (2x ye^y)dy = 0$, $\mu(x, y) = y$. (Solve explicitly for x.)
- (b) $(x+2)\sin y \, dx + x\cos y \, dy = 0$, $\mu(x,y) = xe^x$. (Leave answer in implicit form.)
- (c) $(3x^2y + y^4)dx + (3x^3 4xy^3)dy = 0$, $\mu(x) = x^p$ for some constant p which you must find. (Leave answer in implicit form.)