1) Solve the linear differential equation

$$(1 - 4xy^2)\frac{dy}{dx} = y^3$$

2) Solve the initial value problem

$$(6xy - y^3)dx + (4y + 3x^2 - 3xy^2)dy = 0, \qquad y(0) = 1$$

3) Use a suitable substitution to find a linear differential equation from

$$x\frac{dy}{dx} + 6y = 3xy^{\frac{4}{3}}$$

<u>Do not solve the new equation</u>

4) Use a suitable substitution to find a separable differential equation from

$$x\frac{dy}{dx} = y + \sqrt{x^2 - y^2}$$

<u>Do not solve the new equation</u>

5) Make the following Nonexact differential equation

$$xdx + (x^2y + 4y)dy = 0$$

an EXACT differential equation using an appropriate integrating factor

Do not solve the new equation