1. $(2x^2 + 2e^y)dx + (2xe^y + 3y^2)dy = 0$
2. $e^x(\cos y\, dx - siny\, dy) = 0, y(0) = 0$
3. Determine for what values of a and b, the following differential equation is exact and ontain the general solution of the exact differential equation
$$(y + x^3)dx + (ax + by^3)dy = 0$$
4. $xdx + ydy + 2(x^2 + y^2)dx = 0$
5. $ydx - xdy + e^{\frac{1}{x}}dx = 0$
6. $x(1 + y^2) + y(1 + x^2)dx = 0$
7. $(5x^3 + 12x^2 + 6y^2)dx + 6xydy = 0$
8. $(3x^2y^3e^y + y^3 + y^2)dx + (x^3y^3e^y - xy)dy = 0$
9. $(2xy + x^2)y' = 3y^2 + 2xy$