NAME: S.No.   ID:

Maximum Marks: 10   Section:07   Time Allowed: 30 minutes

(1) Verify that $y = x\,\sin(x) + \cos(x)\,\ln(\cos(x))$ is a solution of $y'' + y = sec(x)$.

(2) Determine a region in which differential equation $y' = \sqrt{\frac{y^2 - 4}{x}}$ has a unique solution through the point (x_0, y_0).

(3) Find all singular constant solutions of the differential equation $\frac{dy}{dx} = y^2 - 4$ given that $y = 2\frac{1 + ce^{4x}}{1 - ce^{4x}}$ is a one-parameter family of solutions of the differential equation.