QUIZ-3th

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1) Solve the differential equation $3y' = 4x / y^2$ (15 scores)

2) Solve the differential equation $\frac{2xy}{y-1} - y' = 0$ (15 scores)

3) a)What is the slope of line A $y = x/2 + 1$ (5 scores) ? plot the line A in x-y plane (5 scores)

b)What is the slope of line B $y = -2x + 2$ (5 scores) ? plot the line B in x-y plane(5 scores)

c)Consider the family *F* of curves that are graphs of $F(x, y, K) = y - Kx^2 = 0$

Find the family *G* of orthogonal trajectories of the family *F* of curves (20 scores)

4)a)Verify that $y_1(x) = e^{-3x}$, $y_2(x) = e^{-8x}$ are solutions of the differential equation $y'' + 11y' + 24y = 0$ (10 scores)

b)Show that their Wronskian is not zero (10 scores)

c)Write the general solution of the differential equation (5 scores)

d)Find the solution of the initial value problem with $y(0) = 1$, $y'(0) = 4$ (10 scores)

5) a)Verify that $y_1(x) = \cos(x)$, $y_2(x) = \sin(x)$ are solutions of the differential equation $y'' + y = 0$ (10 scores)

b)Show that their Wronskian is not zero (10 scores)

c)Write the general solution of the differential equation (5 scores)