

Quiz No.12

student:

Problem 1: Write two differential equations.

Problem 2: Which of the following differential equations are linear:

- a) $y' = e^x + y$
- b) $y' = y + y'^2$
- c) $\sin(y') = \cos(y + x)$
- d) $\frac{1}{y'-y} + \frac{1}{y'+y} = \frac{1}{y'+x}$

Problem 3: Which of the following differential equations are first order:

- a) $y' = e^x + y''$
- b) $y' = y + y'^2$
- c) $y'y'' = y' + x$
- d) $\frac{1}{y'-y} + \frac{1}{y'+y} = \frac{1}{y'+x}$

Problem 4: Which of the following differential equations are separable:

- a) $y' = f(x)$
- b) $y' = y^2$
- c) $y = y'(1 + x)$
- d) $u' = 2 + 2u + t + tu$

Problem 5: After each equation, write as many of the adjectives 'linear', 'first order', 'separable' as applicable.

- a) $y' = \frac{xy}{2\ln(y)}$
- b) $y'^2 + xy = x^2 + y''$

Summer Term I
Kostadinov

MA124 Calculus II
Boston University

Problem 6: Solve the differential equation
 $y' = xy$

Problem 7: Solve the differential equation
 $yy' = x$

Problem 8: Solve the differential equation
 $y' = y^2$

Problem 9: Solve the differential equation
 $y' = y^2$ with initial condition $y(0) = 1$

Problem 11: Solve the differential equation
 $y' = 2y$ with initial condition $y(0) = 1$