EXAMEN ECUATII DIFERENTIALE – AN I AUTOMATICA

NR 1

Subiect 1. Rezolvati ecuatiile :

a) $3txx' = 3x^2 - t^2$

b) $x' = \frac{4x-2t+6}{x+t-3}$

c) $x' = \frac{2t}{t^2+4} x + 3t^4 + 12t^2$

d) $x' = -2x + x^2 e^t$

Subiectul 2 Rezolvati ecuatiile :

a) $(t^3 + tx^2) dt + (t^2x + x^3) dx = 0$

b) $(1-t^2x) dt + t^2 (x – t) dx = 0$

Subiectul 3 Rezolvati ecuatia :

$$X'' – 6 x' + 8 x = 8 e^{2t} + 16 t^2 + 8t + 4$$

Subiectul 4 Rezolvati ecuatia :

$x_1x_2\frac{\partial u}{\partial x_1} + x_2x_3 \frac{\partial u}{\partial x_2} + x_3^2 \frac{\partial u}{\partial x_3} = 0$ si problema Cauchy

$u(x_1 , x_2 , 1) = x_1 – x_2 +1$

Subiectul 5 Rezolvati ecuatia :

$\frac{\partial^2 u}{\partial x^2} + 7 \frac{\partial^2 u}{\partial x \partial y} + 10 \frac{\partial^2 u}{\partial y^2} = 0$ si problema Cauchy $u(x,2x) = e^{-x}$,

$u(x , 5x) = e^x$.

EXAMEN ECUATII DIFERENTIALE – AN I AUTOMATICA

NR 2

Subiect 1. Rezolvati ecuatiile :

a) $t^2 x' = x^2 + xt + 4t^2$

b) $x' = \frac{2x-t-5}{-x+2t+4}$

c) $x' = \frac{3t^2}{t^3+1} x + 4t^3 + 4t$

d) $x' = -\frac{1}{t} x - tx^2$

Subiectul 2 Rezolvati ecuatiile :

a) $(3t^2 + 6tx^2) dt + (6t^2x + 4x^3) dx = 0$

b) $(2tx^2 - 3t^3) dt + (7 - 3tx^2) dx = 0$

Subiectul 3 Rezolvati ecuatia :

$$X'' - 7x' + 10x = 12e^{3t} + 30t^2 + 18t + 24$$

Subiectul 4 Rezolvati ecuatia :

$$x_1\frac{\partial u}{\partial x_1} - x_2\frac{\partial u}{\partial x_2} + (x_3 + x_1^2x_2^2)\frac{\partial u}{\partial x_3} = 0$$ si problema Cauchy

$u(x_1 , 1 , x_3) = x_1^2 + x_3 + 1$

Subiectul 5 Rezolvati ecuatia :

$$3\frac{\partial^2 u}{\partial x^2} - 8\frac{\partial^2 u}{\partial x \partial y} - 3\frac{\partial^2 u}{\partial y^2} = 0$$ si problema Cauchy $u(x , \frac{x}{3}) = e^x$,

$u(x , -3x) = e^{-x}$.