Ecuatii diferentiale de ordin superior liniare

1. Determinati solutia generala pentru urmatoarele ecuatii diferentiale:

   (a) $y^{(2)} - 2y^{(1)} + y = \frac{1}{x}e^x$
   (b) $y^{(2)} + y = \frac{1}{\cos x}$
   (c) $y^{(2)} + 3y^{(1)} + 2y = \frac{1}{1+e^x}$
   (d) $y^{(2)} - 3y^{(1)} + 2y = \frac{e^{3x}}{1+e^{2x}}$
   (e) $y^{(2)} - 4y^{(1)} + 4y = \frac{e^{2x}}{\sqrt{4-x^2}}$
   (f) $y^{(2)} - 4y^{(1)} + 5y = \frac{e^{2x}}{\cos x}$
   (g) $y^{(3)} + y^{(1)} = \tan x$

2. Determinati solutia generala pentru urmatoarele ecuatii diferentiale de tip

   Euler:

   (a) $x^3y^{(3)} + 2x^2y^{(2)} - xy^{(1)} + y = 0$
   (b) $x^2y^{(2)} - 3xy^{(1)} + 5y = 3x^2$
   (c) $(x+2)^2 y^{(2)} + 3(x+2) y^{(1)} - 3y = 0$
   (d) $(2x+1)^2 y^{(2)} - 2(2x+1) y^{(1)} + 4y = 0$
   (e) $x^3y^{(2)} - x^2y^{(1)} + xy = \ln^3 x$
   (f) $(1+x)^3 y^{(2)} + 3(1+x)^2 y^{(1)} + (1+x) y = 6\ln(1+x)$.