

James Eudeneo

171ENG061049

Engineering mathematics

Question 4a

Command window

clc

clear

close all

Syms n(t)

eqn = diff(n,t,2) - diff(n,t) - 12\*n = 144\*t\*(t^3) + 12.5;

cond = n(0) == 5, diff(n,t,2) == 0.5

y(b) = dsolve(eqn, cond)

t = 0:0.1:1.5

James = subs(ySol)

fplot(James)

grid on

Legend('James', 'Location', 'best')

## Question 4B

Command window

clc

clear

close all

Syms = n(t) y(t)

eqn1 = diff(y,t) - x\*x == exp(-2\*t);

eqn2 = diff(x,t) + y - exp(-t);

eqns = [eqn1, eqn2]

Cond = x(0) == 0, y(0) == 0;

Ans = solve(eqns, Cond)

x\_sol(t) = Ans.x

y\_sol(t) = Ans.y

visualizing the solution on graph separately combined with

fplot(x\_sol)

fplot(y\_sol)

grid on

legend('x\_sol', 'location', 'best')

legend('y\_sol', 'location', 'best')

Visualizing the solution on graph together Continue

fplot(xsol)

hold on

fplot(ysol)

grid on

legend('xsol', 'ysol', 'Location', 'best')

Question 4 C

Command window

clc

clear

close all

Syms (t, s, w, r, k, a)

$$x = k \cdot \exp(-a \cdot t) \cdot \sin(s \cdot w \cdot t) \cdot \cos(3 \cdot w \cdot t)$$

F = laplace(x, t, s)

simplify(F)

pretty(ans)

(c) Command window

clc

clear

close all

Syms t s

$$F = p_1 * / (s^2 + 15 * p_1 * s + 24 * (p_1^3))$$

Laplace (f)

Simplex (ans)

Partial (ans)