

SANM ABUL RAHMAN O.

17/ENG03/050

CIVIL ENGINEERING

ENGINEERING MATS (ENR381)

Question 4a
Command window

CIC

Clear

Close all

syms u(t)

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

$$\text{cond} = n(0) = 5, \text{diff}(n, t, 2) = -0.5 ;$$

y sol = dsolve (eqn, cond)

$$t = 0 : 0.1 : 1.5$$

Yami = subs (y sol)

plot (Yami)

grid on

legend ('Yami', 'Location', 'best')

1) Question 4b

Command window

CIC

Clear

Close

syms x(t) y(t)

$$\text{eqn 1} = \text{diff}(y, t) = 2 * x = \exp(-2 * t);$$

$$\text{eqn 2} = \text{diff}(x, t) + y = \exp(-t)$$

$$\text{eqn 3} = [\text{eqn 1} \quad \text{eqn 2}]$$

$$\text{cmd} = x(0) == 0, y(0) == 0;$$

Ans = dsolve (eqns, cmd)

$$x \text{ sol}(t) = \text{Ans } x$$

$$y \text{ sol}(t) = \text{Ans } y$$

(ii) Visualizing the solution on graph separately Continue with

* f plot (x sor)

f plot (y sor)

grid on

legend ('x sor', 'location', 'best')

legend ('y sor', 'location', 'best')

Visualizing the solution on graph together Continue with

f plot (x sor)

hold on

f plot (y sor)

grid on

legend ('x sor', 'y sor', 'location', 'best')

QUESTIONS AC

Command window

clc

clear

close all

Syms t s w x k a

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

F = laplace(x, t, s)

Simplify(F)

Pretty(ans)

(ii) Command window

clc

clear

close all

Syms t s

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

i Laplace (F)

Simplify (ans)

Pretty (ans)