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17/ENR021041

COMPUTER ENGINEERING

ENR MATHS ENR 381

4)a) Command window

clc

close all

Syms n(t)

$\Delta = \text{diff}(n)$

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

$\text{cond1} = \Delta(0) == -0.5;$

$\text{cond2} = n(0) == 5;$

$\text{conds} = [\text{cond1} \text{ cond2}];$

$\text{dsol}(t) = \text{dsolve}(\text{ode}, \text{conds});$

~~dsol~~  $\text{dsol} = \text{simplify}(\text{dsol}(t))$

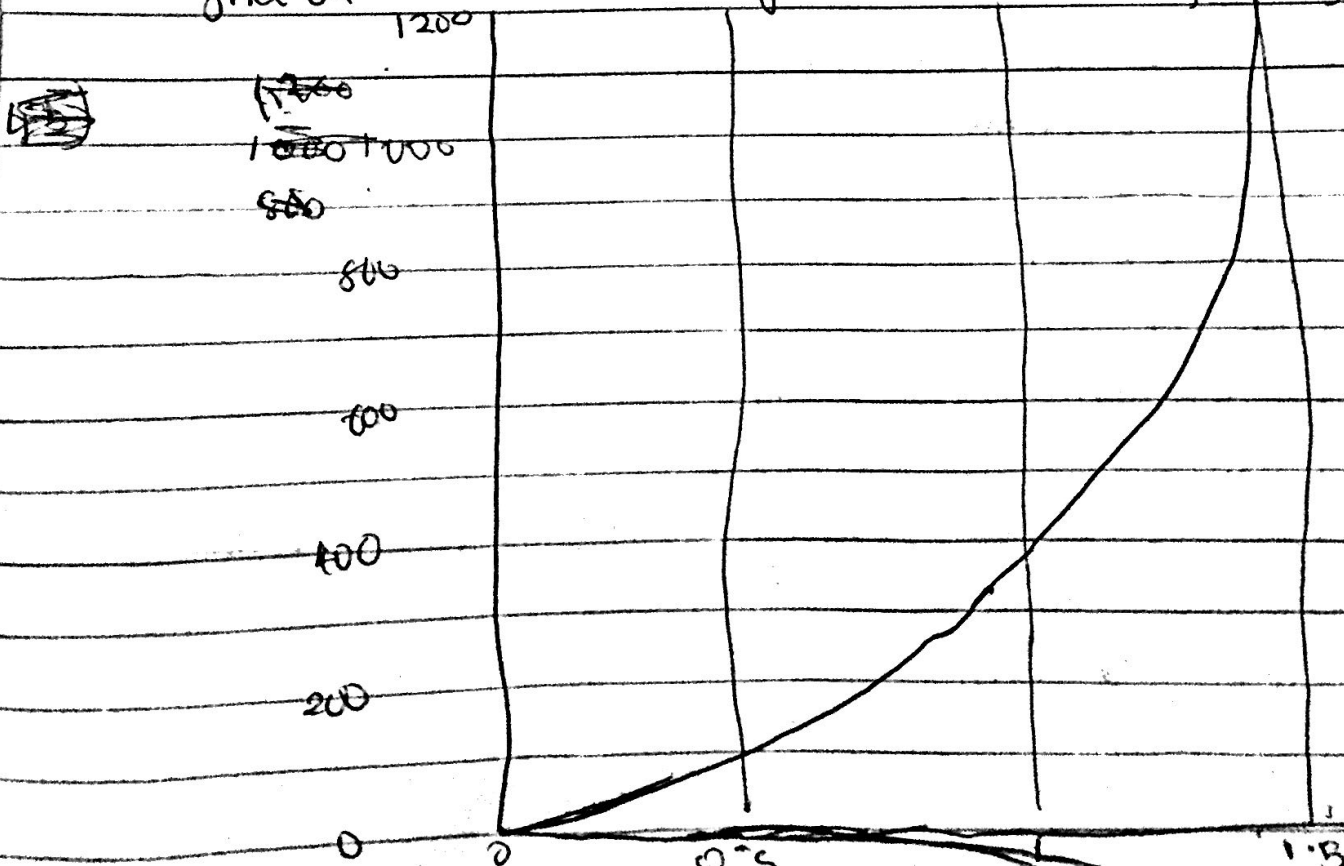
$\text{tn} = (0:0.1:1.5)$

~~femmy~~  $\text{Ace} = \text{subs}(\text{dsol}, \text{tn})$

$\text{plot}(\text{tn}, \text{femmy})$   $(\text{tn}, \text{Ace})$

grid on

legend('yini', 'location', 'best')



4c) Command window

clear

clc

Syms 'k w t s f(t) . f(s) a

$$Z = k * \exp(-a * t) * \sin(s * w * t) * \cos(3 * w * t)$$

~~if~~ f(s) laplace(x, t, s)

~~if~~ simplify(ans) = pretty(ans)

4b) i) Command window

clc

clear

close

Syms x(t) y(t)

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

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

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

Ans = solve(eqn1, eqn2, cond)

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

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

ii) Command window Visualizing the solutions as graph

Separately continue with

f plot(x sol)

f plot(y sol)

grid on

legend('x sol', 'locator', 'best')

legend('y sol', 'locator', 'best')

Visualizing the solutions as graph together continue

continue with

f plot(x sol)

hold on

F plot (y sol)

grid on

legend ('gsol', 'y6ol', 'weatol', 'best')

~~4c)~~

4c) ii) Command window

clc

clear

close all

syms t s

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

i laplace (F)

simplify (ans)

pretty (ans)