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Matric Number: 17/MHS01/187

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Assignment

4a command window

clc

close all

syms n(t)

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

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

cond 1 =  $n(0) == -0.5$ ;

cond 2 =  $n'(0) == 5$ ;

conds = [cond1, cond2];

dsol(t) = dsolve(ode, conds);

dsol = simplify(dsol(t))

tn = 0:0.1:1.5

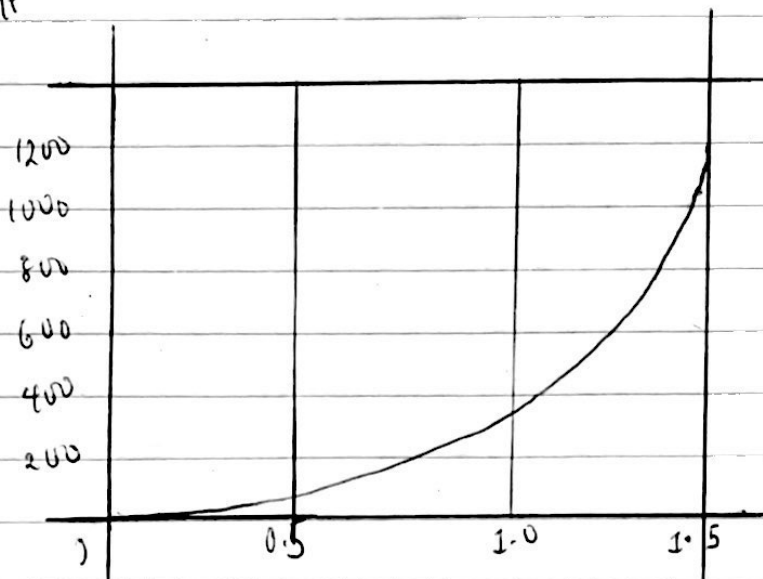
jonah = subs(dsol, tn)

plot(tn, jonah)

grid on

grid minor

axis tight



```

b  command window
clear
clc
syms y(t) x(t)
Dy = diff(y,t)
Dx = diff(x,t)
equ1 = Dy == exp(-2*t) + 2*x
equ2 = Dx == exp(-1*t) - y
ode = (equ1:equ2)
sem cond = x(0) == 0, y(0) == 0;
Ans = dsolve(ode, cond)
x_sol(t) = Ans.x
y_sol(t) = Ans.y
fplot(x_sol(t))
fplot(y_sol(t))
grid on
legend('x_sol', 'Location', 'best')
legend('y_sol', 'Location', 'best')
fplot(x_sol)
hold on
fplot(y_sol)
grid on

```

4c) Command window

clear all

clc

syms f(s)

$$f(s) = (3.142) / ((s^2) + 15 * 3.142 * s + 24 * (3.142^3))$$

ilaplace(f(s))

command window

clear all

clc

syms f(t) k w t a

$$f(t) = k * \exp(-a * t) * \sin(5 * w * t) * \cos(3 * w * t)$$

laplace(f(t))