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4ai Command window

clear

clc

syms n(t)

$$\text{mimi} = \text{diff}(n(t, 2)) - \text{diff}(n(t)) - 12 * n == 144 * t^3 + 12 * 5$$

$$\text{dsolve} = \text{diff}(n(t))$$

$$\text{marli} = [\text{nc0}] == 5, \text{dmimi}(0) == -0.5$$

$$\text{Okon} = \text{dsolve}(\text{mimi}, \text{marli})$$

pretty(Okon)

$$t_n = (0 : 0.1 : 1.5)$$

$$\text{mimin} = \text{subs}(\text{Okon}, t_n)$$

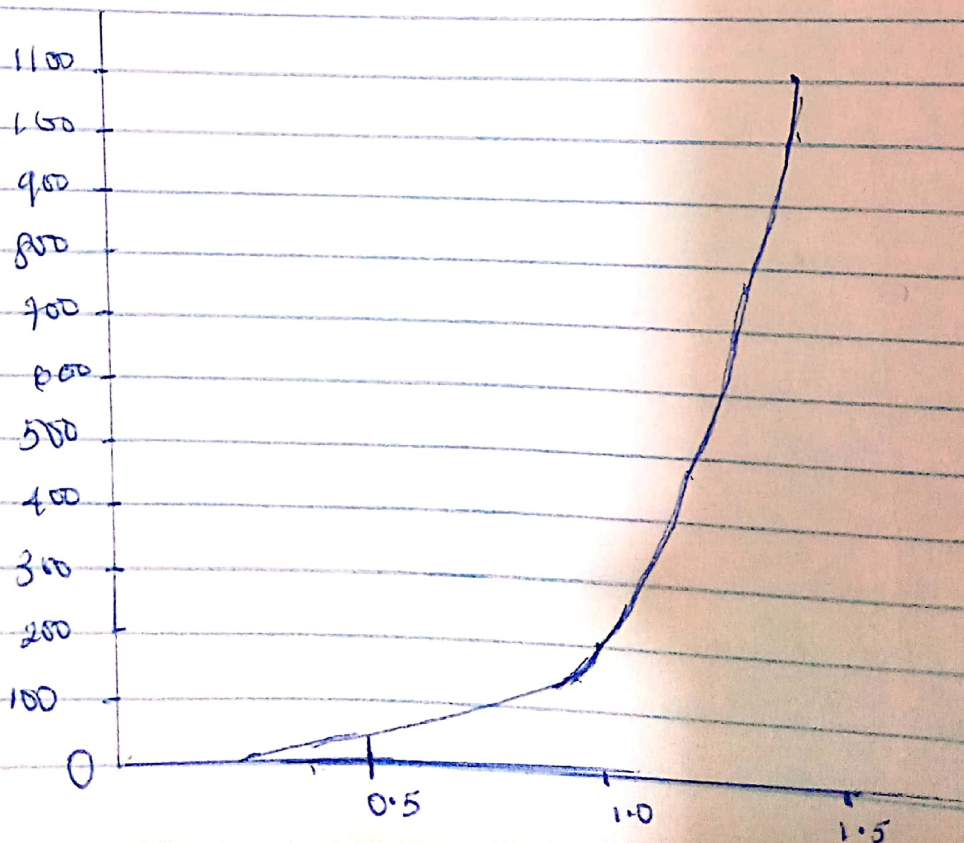
plot(tn, mimin)

axis tight

grid on

grid minor

4aii)



b) command window

clear

clc

syms y(t) x(t)

milly = diff(y,t) - 2*x == exp(-2*t)

milly2 = diff(x,t) + y == exp(-t)

milly3 = [milly, milly2]

cond = [y(0) == 0, x(0) == 0]

[yeq, xeq] = dsolve(milly3, cond)

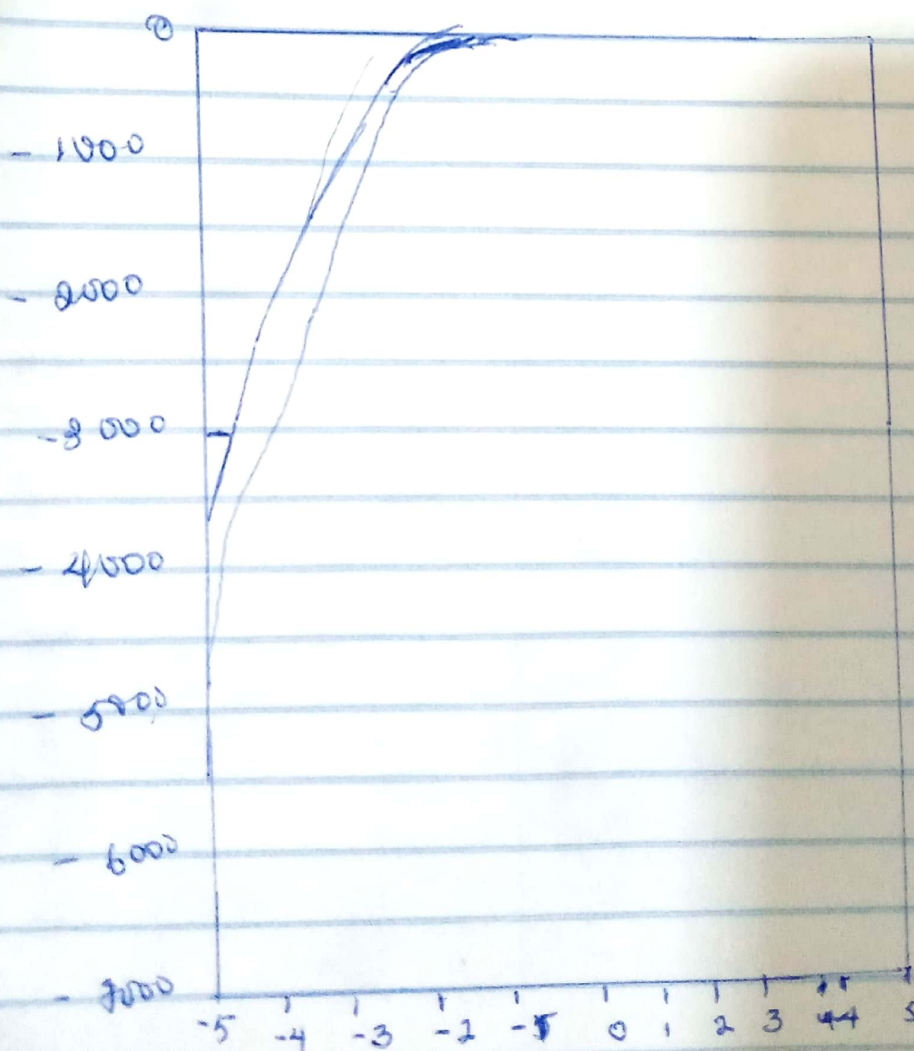
fplot(yeq)

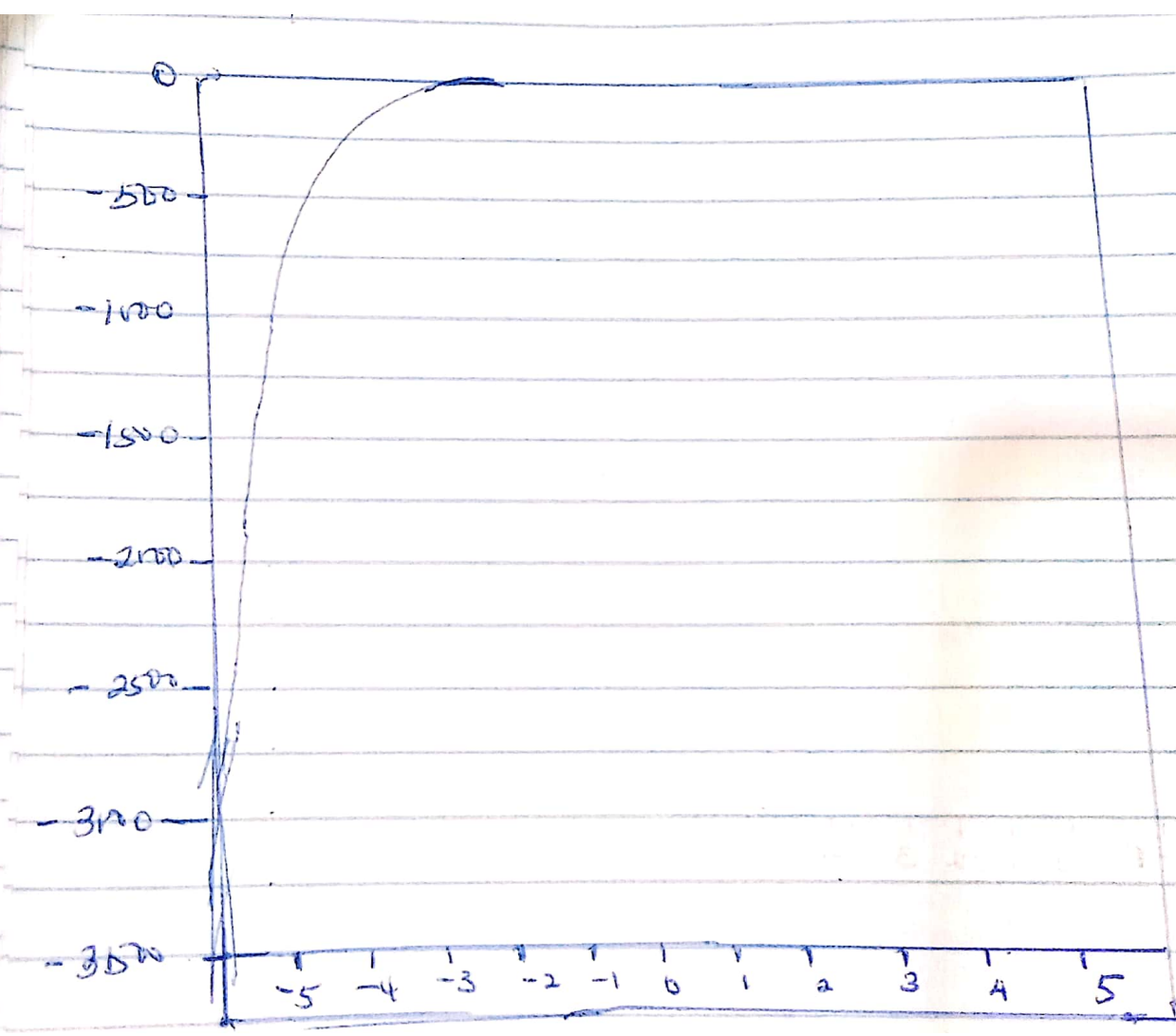
hold on

fplot(xeq)

grid on

grid minor





common dwindow

clear

clc

syms y(t) x(t)

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

$$milly2 = \text{diff}(x, t) + y == \exp(-t)$$

$$milly3 = [milly, milly2]$$

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

$$[y_{eq}, x_{eq}] = \text{dsolve}(milly3, \text{cond})$$

figure (1)

fplot (y_{eq})

grid on

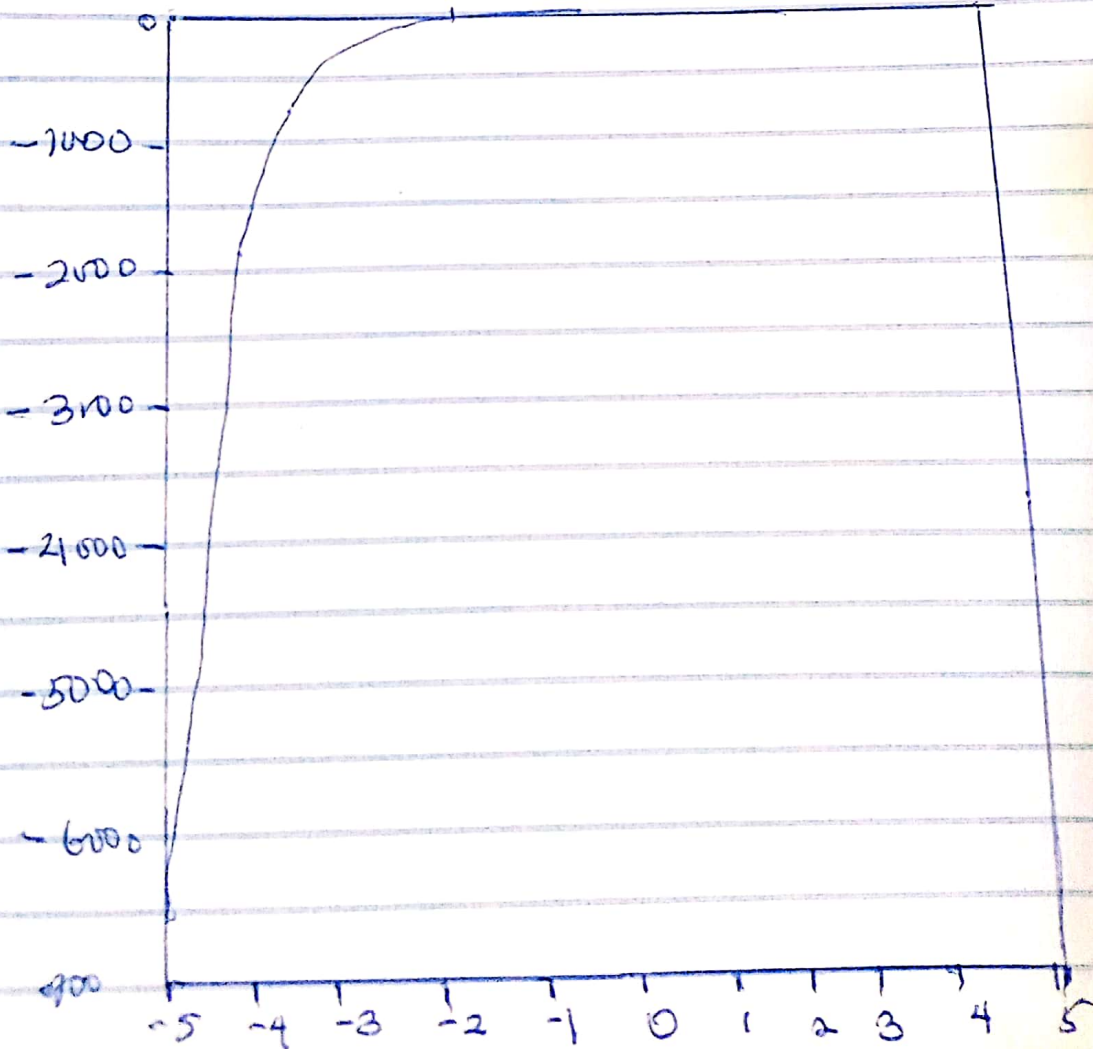
grid minor

figure (2)

fplot (x_{eq})

grid on

grid minor



Command window

clear

clc

Syms t k a w

$$ft = k * \exp(-a * t) * \sin(5 * 10 * t) * \cos(3 * w * t)$$

$$fs = \text{laplace}(ft)$$

y =

2