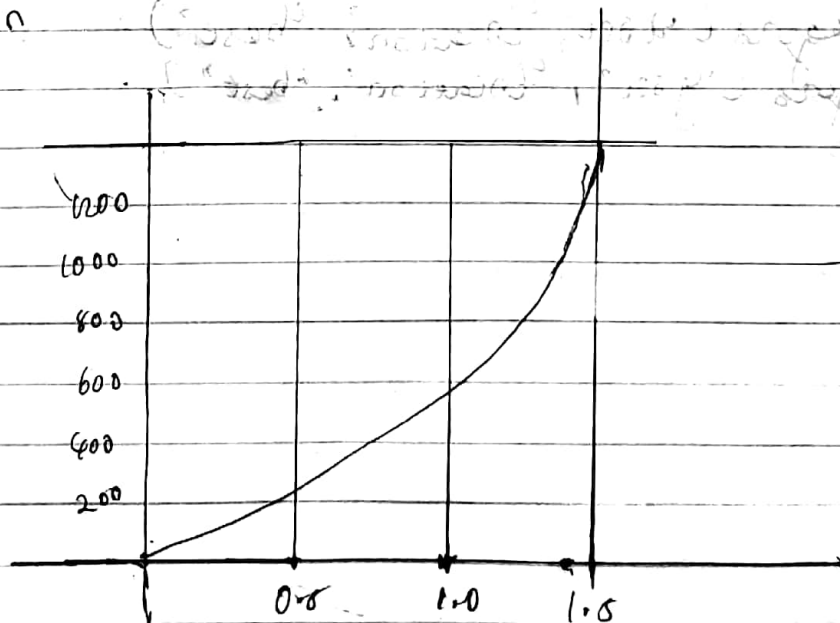


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17/ENG07/005

PETROLEUM ENGINEERING

4a Command window

```
clc  
close all  
syms n(t)  
D = diff(n)  
Ode = (diff(b, t, 2) - diff(n, t) - (12 * n)) == 144 * t^3 + 12 * t  
cond1 = D(n) == 0.5;  
cond2 = n(0) == 5;  
conds = [cond1 cond2];  
dsol(n) = dsolve(Ode, conds);  
dsol = simplify(dsol(n));  
tn = [0 : 0.1 : 1.5];  
kehinde = subs(dsol, tn);  
plot(tn, kehinde)  
grid on
```



46) Command window

clear

de

syms y(t) y'(t)

Dy = diff(y, t)

Dx = diff(x, t)

eqn1 = Dy = exp(-2\*t) + 2\*x

eqn2 = -Dx = exp(-2\*t) - y

Ode = [eqn1; eqn2]

Rehinde = dsolve(Ode)

y\_sol(t) = Rehinde.y

x\_sol(t) = Rehinde.x

plot(y\_sol)

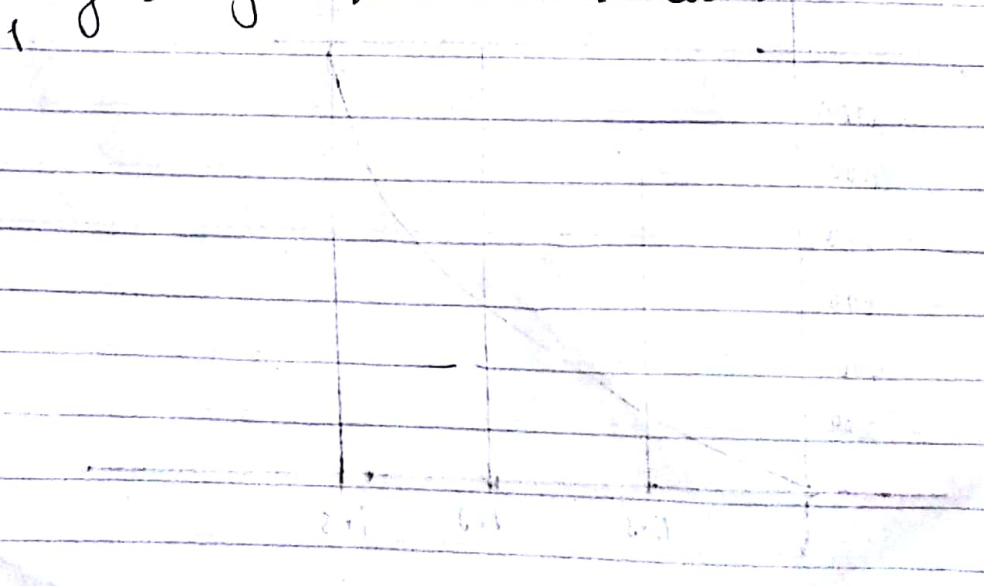
hold on

plot(x\_sol)

grid on

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

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



$$4c \quad f(s) = \frac{\pi}{s^2 + 15s + 24\pi^2}$$

Command window

clear

clc

syms f(s) a

$$u = (3.142) (s^2) + 15 * 3.142 * s + 24 * (3.142^2)$$

i laplace(-u)

$$f(t) = k e^{-at} \sin(\omega t) \cos(\beta t)$$

Command window

clear

clc

syms f(s) k w t a

$$z = k * \exp(-a*t) * \sin(\omega*t) * \cos(\beta*t)$$

i laplace(z)