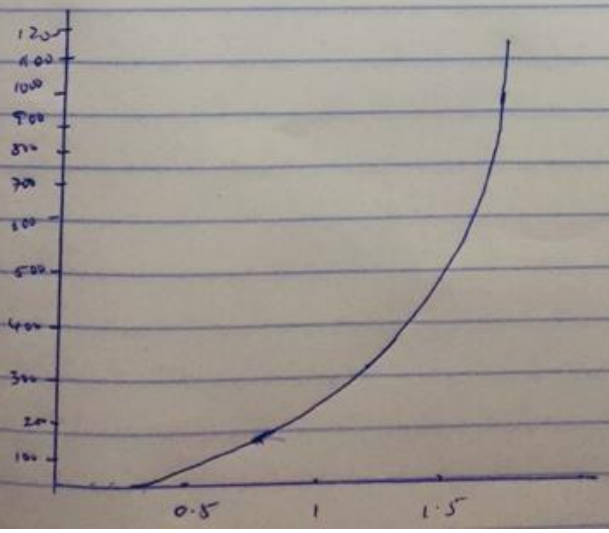
Aigbogun Ehiedu Mcleod
17/ENG04/1091
Petroleum Engineering
ENG381

40.

```
Command window
clear
clc
closeall
syms n(t)
ode = diff(n,t,2) - diff(n,t) - 12*n == 144*(t^3) +12.5;
Dn = diff(n
cond [n(0) == 5; Dn(0) == -0.5];
dsol(t) = dsolve (ode, cond);
dsol = simplify (dsol(t))
tn = [0 : 0.1 : 1.5]
Ans = subs(dsol, tn)
plot (tn, Ans)
grid on
grid minor
axis tight
```



4c

① Command window

```
clear
clc
syms k w f(t) a
z = k*exp(-a*t)*sin(5*w*t)*cos(3*w*t)
laplace (z)
```

② command window

```
clear
clc
syms f(s)
u = 3.142/((s^2)+15*3.142*s+24*(3.142^3))
ilaplace (u)
```

46. Command window

```
clear
clc
close all
syms y(t) x(t)
ode1 = diff(y,t) - 2*x == exp(-2*t)
ode2 = diff(x,t) + y == exp(-t)
oden = [ode1, ode2]
cond = [y(0) == 0; x(0) == 0];
[yeq xeq] = dsolve(oden, cond)
fplot(yeq)
hold on
fplot(xeq)
legend('yeq', 'xeq', 'location', 'best')
grid on
grid minor
axis tight
```