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Matric: 17/ENG03/002

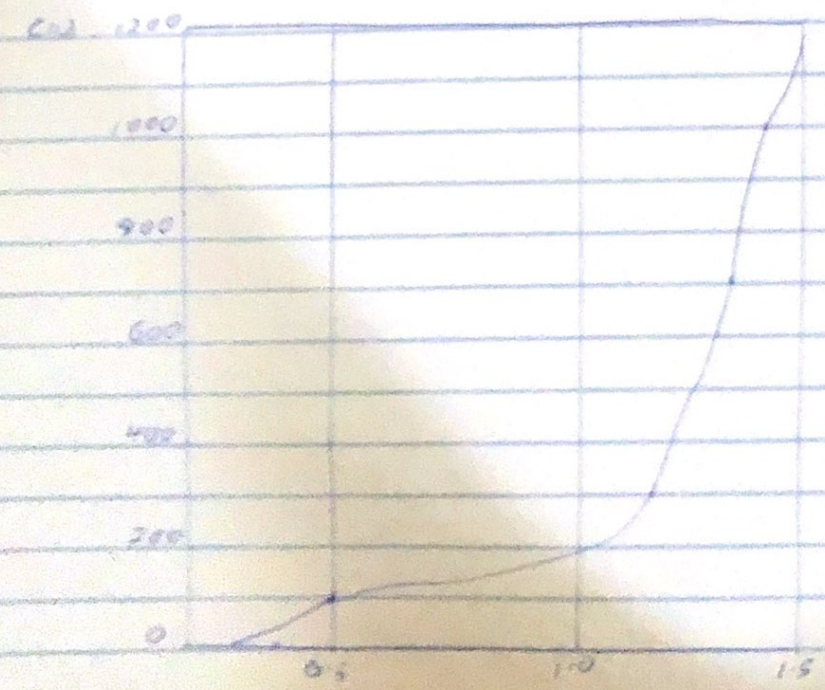
Dept: Civil Engineering

Assignment:

17 (a)

1) - Command Window

- clc
- close all
- syms x(t)
- D = diff(x)
- ode = (diff(x,t,2)) - (diff(x,t)) - (12*x) == 144*t^3 + 12.5;
- cond1 = D(0) == -0.5;
- cond2 = x(0) == 8
- cond3 = [cond1 cond2];
- dsol(t) = dsolve(ode, cond3);
- dsol = simplify(dsol(t))
- t2 = (0:0.1:1.5)
- ysoln = subs(dsol, t2)
- plot(t2, Abel)
- grid on



4(b): Command window

```
clear
clc
syms y(t) y 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]
Sampson = dsolve(ode)
ysol(t) = sampon.y
xsol(t) = sampson.x
fplot(ysol)
hold on
fplot(xsol)
```

4(a) $F(s) = \dfrac{1}{(s^2 + 15\pi s + 24\pi^2)}$

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

$f(t) = xe^{-at} \sin(5\omega t)\cos(3\omega t)$

```
clear all; close all
clear
clc
syms x f(t) a t
z = x*exp(-a*t)*sin(5*w*t)*cos(3*w*t)
ilaplace(z)
```