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ENG 381 Maths.

Question 4.

A. Command Window

clc

clear

close all

syms n(t)

eqn = diff(n,t,2) = diff(n,t) - 12n = 144 + (t^3) + 12.5;

Cond = n(0) = 5; diff(n,t)(0) = -0.5

yso = solve(eqn, cond)

t = 0:0.1:1.6

Tboy = subs(yso,t)

fplot(Tboy)

grid on

legend('Tboy', 'Location', 'best')

B. Command window

clc

clear

close

syms x(t) y(t)

eqn1 = diff(y,t) - 2xy = exp(-2t);

eqn2 = diff(x,t) + y = exp(-t);

eqns = [eqn1 eqn2]

Cond = x(0) = 0, y(0) = 0;

Ans = solve(eqns, cond)

xso(t) = Ans.x

yso(t) = Ans.y

II Visualizing the solution on graph separately continue with

```
fplot(xsol)
fplot(ysol)
grid on
legend('xsol', 'location', 'best')
legend('ysol', 'location', 'best')
```

III Visualizing the solution on graph together continue

```
fplot(xsol)
hold on
fplot(ysol)
grid on
legend('xsol', 'ysol', 'location', 'best')
```

C. Command window

```
clc
clear
close all
```

```
sums = 1:5; % k a
x = k * exp(ka * t) * sin(3 * w * t) * cos(3 * w * t)
F = laplace(x, t, s)
simplify(F)
pretty(ans)
```

II Command window

```
clc
clear
close all
```

```
sums = 1:5; % k a
F = pi * ( (3^2) + (5 * pi * s + 24 * (pi * 3)) )
i(laplace(F))
```


Simplify Cars)
pretty Cars.