

Question 4

17/07/2011

Command window

close all

clear

clc

syms n(t) t

$$\text{ode} = \text{diff}(n, t, 2) - \text{diff}(n, t)$$

$$In = \text{diff}(n, t)$$

$$y\text{sol} = \text{dsolve}(\text{ode}, In)$$

$$\text{Cond1} = (n == 5) \cdot 2$$

$$\text{Cond2} = (n == -0.5)$$

$$\text{Cond} = (\text{Cond1}; \text{Cond2})$$

$$y\text{sol} = \text{dsolve}(\text{ode}, \text{Cond})$$

$$t = 0 : 0.1 : 1.5$$

$$tn = \text{subs}(y\text{sol}, t)$$

$$\text{plot}(tn, t)$$

b) Command window

close all

clear

clc

syms y x t

$$\text{ODE1} = \text{diff}(y, t) - 2^*x = \text{exp}(-2*t);$$

$$\text{ODE2} = \text{diff}(x, t) + y = \text{exp}(-t)$$

$$\text{ODES} = (\text{ODE1}; \text{ODE2})$$

$$y\text{sol} = \text{dsolve}(\text{ODES})$$

$$\text{Cond1} = (x == 0)$$

$$\text{Cond2} = (y == 0)$$

$$\text{Cond} = (\text{Cond1}, \text{Cond2})$$

$$y\text{sol} = \text{dsolve}(\text{ODES}, \text{Cond})$$

$$(x\text{sol}, y\text{sol}) = \text{dsolve}(\text{ode}, \text{Cond}).$$

$$x_{sol}(t) = x_{sol} t$$

$$y_{sol}(t) = v_{sol} t$$

fplot (x sol t)

hold on.

fplot (y sol t)

axis on

grid on

(3)