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A graph of a graph of a function

Description automatically generated with medium confidence

A:

These two graphs appear the same because integer time values

Appear the same because not enough points

f= @(t) exp(-t).\*cos(2\*pi\*t);

subplot(3,1,1);

t=(-2:2);

plot(t,f(t));

xlabel('t');ylabel('f(t)');grid;title('A.1');

subplot(3,1,2);

t=(-2:0.01:2);

plot(t,f(t));

xlabel('t');ylabel('f(t)');grid;title('A.1.2');

B.

A group of graphs with numbers

Description automatically generated with medium confidence

subplot(3,1,3);

g= @(t) exp(-t);

t=-2:2;

plot(t,g(t));

xlabel('t');ylabel('g(t)');grid;title('A.2');

u = @(t) 1.0.\*(t>=0);

p = @(t) u(t)-u(t-1);

subplot(3,3,1);

t = (-1:0.01:2);

plot(t,p(t));

xlabel('t');ylabel('p(t)=u(t)-u(t-1)'); axis([-1 2 -.1 1.1]);title('B.1');

subplot(3,3,2);

r= @(t) t.\*p(t);

plot(t,r(t));

xlabel('t');ylabel('r(t)');axis([-1 2 -.1 1.1]);title('B.2');

subplot(3,3,3);

n =@(t) r(t) + r(-t + 2);

plot(t,n(t));

xlabel('t');ylabel('n(t)');axis([-1 2 -.1 1.1]);title('B.2');

subplot(3,3,4);

n1 =@(t) n(0.5.\*t);

plot(t,n1(t));

xlabel('t');ylabel('n1(t)');axis([-1 2 -.1 1.1]);title('B.3');

subplot(3,3,5);

n2 =@(t) n1(t+0.5);

plot(t,n2(t));

xlabel('t');ylabel('n2(t)');axis([-1 2 -.1 1.1]);title('B.3');

subplot(3,3,6);

n3 =@(t) n(t+0.25);

plot(t,n3(t));

xlabel('t');ylabel('n3(t)');axis([-1 2 -.1 1.1]);title('B.4');

subplot(3,3,7);

n4 =@(t) n3(t.\*0.5);

plot(t,n4(t));

xlabel('t');ylabel('n4(t)');axis([-1 2 -.1 1.1]);title('B.4');

linear pulse r\*p(t) r, t = 1 but r value is changing

the rest are shifted versions of R

C.

A screenshot of a graph

Description automatically generated

f = @(t) exp(-2\*t).\*cos(4\*pi\*t);

u = @(t) 1.0.\*(t>=0);

g = @(t) f(t).\*u(t);

subplot(4,1,1);

t = (-2:0.01:2);

plot(t,g(2\*t+1));

xlabel('t');ylabel('g(2t+1)'); grid;title('C.1');

subplot(4,1,2);

t = (-2:0.01:4);

s = @(t) g(t+1);

plot(t,s(t));

xlabel('t');ylabel('s(t)'); grid;title('C.2');

subplot(4,1,3);

for a = 1:2:7

t = (0:0.01:4);

s = @(t) exp(-2)\*exp(-a\*t).\*cos(4\*pi\*t).\*u(t);

plot(t,s(t)); hold on

xlabel('t');ylabel('s{\alpha}(t)'); grid;title('C.3.1');

end

subplot(4,1,4);

t = 0:0.01:4;

alpha\_num = [1, 3, 5, 7];

a = alpha\_num' \* ones(1,length(t));

t\_matrix = ones(length(alpha\_num), 1)\*t;

s = @(t) exp(-2)\*exp(-a.\*t\_matrix).\*cos(4\*pi\*t\_matrix).\*(t\_matrix >= 0);figure;

plot(t,s(t));hold on

xlabel('t');ylabel('s\_{\alpha}(t)');title('C.3.2');

D:

A(:) % display all

A([ 2 4 7 ]) % display elem 2, 4, 7

[ A >= 0.2 ] % returns 1 for true 0 for false if elem larger than 0.2

A([ A >= 0.2 ]) %return values over 0.2 (multiplied A with the prev)

A([ A >= 0.2 ]) = 0 % turned all values over 0.2 to 0 (thus display all elem under)

D.2

a)

tic

load('ELE532\_Lab1\_Data.mat')

for c = 1:1024

for d = 1:100

if abs(B(c,d)) < 0.01

B(c,d)=0;

end

end

end

B

toc

b)

load('ELE532\_Lab1\_Data.mat')

B([abs(B) <= 0.01])=0;

B

c)

A screenshot of a computer

Description automatically generatedA screenshot of a computer

Description automatically generated

D.3

count = 0;

X =0;

for i = 1:20000

X(i) = x\_audio(i);

if X(i) < 0

X(i) = 0;

count = count +1;

end

end

disp(X);

disp(count);

sound(x\_audio, 8000)

A white sheet with numbers

Description automatically generated