End-sem-ss-mcq-B

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Untitled Section

1 point

If $x(t) \overset{FT}{\rightarrow} X(f)$,
then the inverse Fourier-transform of $X(5f+3)$ ...?

- 0.2 exp(-j6πt/5)x(t/3)
- 0.2 exp(-j6πt/5)x(t/5)
- 0.2 exp(-j4πt/5)x(t/5)
- None of them
- 0.2 exp(-j5πt)x(t/5)
- 3x(3t) exp(-j5πt)
- 0.2 exp(-j5πt/6)x(t/5)
- x(5t+3)
- 1/3 x(t/3) exp(j5πt)
- 1/3 exp(-j6πt/5)x(t/5)

1 point

If $x(t)$ and $y(t)$are the periodic signals with period T and maintains relation $c_n^y = c_{n+2}^x$, where c_n^y and c_n^x are the n^{th} Fourier-series coefficient of $x(t)$ and $y(t)$ respectively. Then the following which relation is true ...?

- None of them
- y(t)=x(t) exp(-j4πt/T)
- y(t)=x(t-2) exp(j2πt/T)
- y(t)=x(t) exp(j4πt/T)
- All correct
- y(t)=x(t) exp(j2πt/T)
- y(t)=x(t+2) exp(j2πt/T)
- y(t)=x(t) exp(-j2πt/T)

1 point

Suppose a analog signal $x(t)$ is bandlimited $X(\omega) = 0; |\omega| > \omega_M$ and sampled at Nyquist rate ω_0 .
Determine the Nyquiste rate is required for the signal $y(t) = x(t)sin(\omega_0 t)$ (with no aliasing).

- 0.33
- T> 150
- < 2ω0
- <3ω0
- 150
- 600
- 0.33x10^-2
- None of them
- ω0/2
- ω0
- > 3ω0
- 1+ω0

1 point

The impulse response of a sytem in frequency domain is expressed as

$$H(\omega) = \begin{cases} e^{-j\pi/2} & \omega > 0 \\ e^{j\pi/2} & ; \omega < 0 \end{cases}.$$

The time-domain representation of impulse response ..?

- t/π
- -(πt)^-1
- (πt)^-1
- jsgn(t)
- sgn(t)
- 2/(jω)
- -sgn(t)
- None of them
- π/t
- jω/2

1 point

suppose $x(t) = \frac{2}{\sqrt{(\pi)}} t^{0.5} \overset{LT}{\rightarrow} \frac{1}{s+1}$,
then the Laplace transform of $g(t) = \sqrt{1/\pi}\, t^{-0.5}$ .....?

- 1/(1+s^-1)
- (1-s)^2/s
- -1/(1+s^-1)
- s^2/(1+s^-1)
- None of them
- 1/(s+1)
- s^2/(1-s)
- s/(1-s)

2 points

Determine the laplace transform of the impulse function $\delta(2t^2 - 5t + 3)$ ..?

- exp(3s)+exp(-s)
- exp(-3s)+exp(-s)
- exp(-3s/2)+exp(-s)
- 1/2 exp(+3s/2)+exp(-s)
- exp(-3s/2)+1/2 exp(-s)
- 1/2 exp(-3s/2)+exp(-s)
- 1/2 exp(-3s/2)+exp(s)
- exp(-s)+exp(-2s)
- None of them
- 1/2 exp(3s/2)+exp(s)

1 point

If $x(t) = cos(20\pi t)cos(200\pi t)$,
then the Hilbert transform of $x(t)$ ...?

- sin(20 t) sin(200πt)
- sin(20 πt) cos(200πt)
- cos(2 πt) sin(20πt)
- -cos(20 πt) sin(200πt)
- sin(20πt) sin(2000πt)
- sin(20 πt) sin(20πt)
- cos(20 πt) sin(200πt)
- sin(20 πt) sin(2000π)
- sin(20 πt) sin(200πt)
- -sin(20 πt) sin(200πt)
- None of them

Which of the following signals can not be represented by Fourier-series ..? 2 points

- 2 cos(πt) + 3 cos(t)
- 2cos(t) + b cos(3t)
- 3 cos(1.5πt) + sin(3.5πt)
- None of them
- 0.5 + 3 cos(t)

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