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Question 1

Not yet answered

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Obtain the Fourier transform of

$$(e^{-t} + 2)u(t) - 1$$

Select one:

- a. $\frac{2 + j3\omega}{j\omega(1 + j\omega)}$
- b. $\pi\delta(\omega) + \frac{2 + j3\omega}{j\omega(1 + j\omega)}$
- c. $2\pi\delta(\omega) + \frac{1}{1 + j\omega}$
- d. $\frac{1}{-\omega^2(1 + j\omega)}$

Question 2

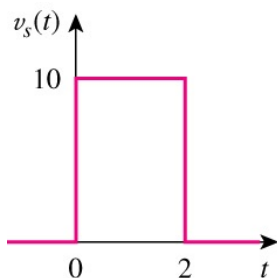
Not yet answered

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What is the Fourier transform of the following function?



Select one:

- a. $\frac{20}{\omega} e^{-j\omega} \sin \omega$
- b. $\frac{10}{j\omega} (e^{-j2\omega} - 1)$
- c. $\frac{20(1 - \cos \omega)}{\omega} e^{-j\omega}$
- d. $10[\delta(t) - \delta(t - 2)]$

Question 3

Not yet answered

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If the Fourier transform of $f(t)$ is

$$F(\omega) = \frac{8}{6 + j\omega},$$

what is the Fourier transform of $f(0.5t + 1)$?

Select one:

- a. $\frac{8e^{j2\omega}}{3 + j\omega}$
- b. $\frac{16e^{-j2\omega}}{3 + j\omega}$
- c. $\frac{16e^{-j\omega}}{3 + j\omega}$
- d. $\frac{8e^{j\omega}}{3 + j\omega}$

Question 4

Not yet answered

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Obtain $Y(\omega)$ if

$$y''(t) = 2\delta'(t) - \delta(t + 1) + \delta(t - 1).$$

Select one:

- a. $\frac{2}{\omega^2}(\cos \omega + \omega)$
- b. $-\frac{2}{\omega^2}(\cos \omega - \omega)$
- c. $-\frac{j^2}{\omega^2}(\sin \omega + \omega)$
- d. $\frac{j^2}{\omega^2}(\sin \omega - \omega)$

Question 5

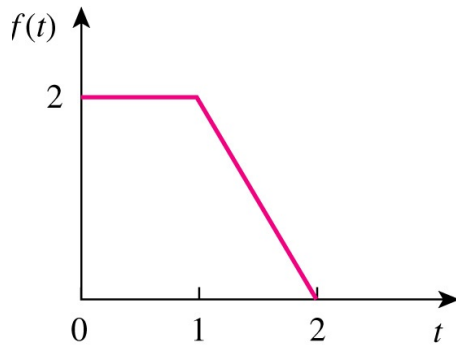
Not yet answered

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What is the second order derivative of the following function?



Select one:

- a. $f''(t) = 2[\delta'(t) - \delta(t - 1) + \delta(t - 2)]$
- b. $f''(t) = 2[-\delta(t - 1) + \delta(t - 2)]$
- c. $f''(t) = 2[\delta(t - 1) - \delta(t - 2)]$
- d. $f''(t) = 2[-\delta'(t) + \delta(t - 1) - \delta(t - 2)]$

Question 6

Not yet answered

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Calculate the inverse Fourier transform of

$$\frac{\omega^2}{\omega^2 + 100}$$

Select one:

Edit question

- a. $\delta(t) + 5e^{-10|t|}$
- b. $5\delta(t) - e^{-10|t|}$
- c. $\delta(t) - 5e^{-10|t|}$
- d. $5\delta(t) + e^{-10|t|}$

Question 7

Not yet answered

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Obtain $g(t)$ if

$$G(\omega) = \frac{j2\omega}{-\omega^2 + j2\omega + 5}$$

Select one:

- a. $g(t) = e^{-t}(2 \cos 2t + \sin 2t)u(t)$
- b. $g(t) = e^{-t}(\cos 2t - 2 \sin 2t)u(t)$
- c. $g(t) = e^{-t}(\cos 2t + 2 \sin 2t)u(t)$
- d. $g(t) = e^{-t}(2 \cos 2t - \sin 2t)u(t)$

Question 8

Not yet answered

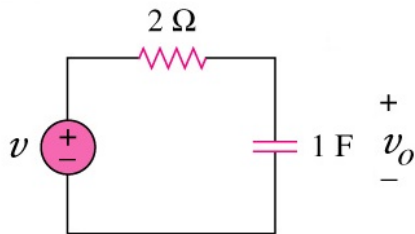
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For the following circuit, compute $v_o(t)$ if the input voltage is given as

$$v(t) = \text{sgn}(t) \text{ V.}$$



Select one:

- a. $v_o(t) = 2\text{sgn}(t) + e^{-t}u(t) \text{ V}$
- b. $v_o(t) = \text{sgn}(t) + 2e^{-0.5t}u(t) \text{ V}$
- c. $v_o(t) = 2(1 - e^{-0.5t})u(t) - 1 \text{ V}$
- d. $v_o(t) = (1 - e^{-t})u(t) - 1 \text{ V}$

Question 9

Not yet answered

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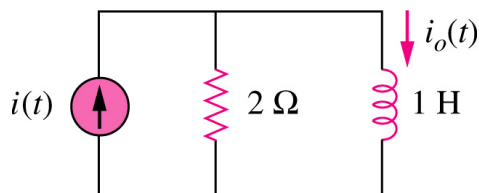
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The current source in the following circuit is given as

$$i(t) = |t| \text{ A.}$$

Obtain the output current $i_o(t)$.




Select one:


- a. $i_o(t) = 2\delta(t) + e^{-2t}u(t)$ A
- b. $i_o(t) = |t| - 0.5\text{sgn}(t) + e^{-2t}u(t)$ A
- c. $i_o(t) = \delta(t) + 2\text{sgn}(t) - e^{-2t}u(t)$ A
- d. $i_o(t) = |t| + (1 + e^{-2t})u(t)$ A

Question **10**

Not yet answered

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The Fourier transform of the current flows through a $10\ \Omega$ resistor is

$$I(\omega) = \frac{1}{5 + j\omega} \text{ A.}$$

Find the total energy dissipated in the resistor.

Select one:

- a. 2 J
- b. 1 J
- c. 4 J
- d. 3 J

Next

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