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Courses » Mathematical Methods and its Applications

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Unit 7 - Week 6

Register for Certification exam

Course outline

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Week 1

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Week 6

- Properties of Laplace transforms-I
- Properties of Laplace transforms-II
- Properties of Laplace transforms-III
- Properties of Laplace transforms-IV
- Convolution Theorem for Laplace Transforms-I
- Quiz : Assignment-6

Assignment-6

The due date for submitting this assignment has passed.
As per our records you have not submitted this assignment.

Due on 2019-03-13, 23:59 IST.

1) $L^{-1}\left[\frac{p+6}{p^2+6p+13}\right]$ *is equal to* *1 point*

- $e^{-3t}\cos 2t + 3e^{-3t}\sin 2t$
- $2e^{-3t}\cos 2t + 3e^{-3t}\sin 2t$
- $e^{-3t}\cos 2t + \frac{3}{2}e^{-3t}\sin 2t$
- $\frac{3}{2}e^{-3t}\cos 2t + e^{-3t}\sin 2t$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$e^{-3t}\cos 2t + \frac{3}{2}e^{-3t}\sin 2t$

2) $If\ \ L[f(t)] = \frac{e^{\frac{-1}{p}}}{p},\ then\ L[e^{-t}f(3t)]\ equals\ to$ *1 point*

- $\frac{e^{-3(p+1)}}{3(p+1)}$
- $\frac{e^{\frac{-3}{p+1}}}{p+1}$

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Score: 0

Accepted Answers:

$$\frac{e^{\frac{-3}{p+1}}}{p+1}$$

3) $L^{-1}\left[\frac{1}{\sqrt[3]{8p-27}}\right]$ *equals to* **1 point**

- $\frac{t^{\frac{-2}{3}}e^{\frac{27t}{8}}}{2\Gamma(\frac{1}{3})}$
- $\frac{t^{\frac{-1}{3}}e^{\frac{27t}{8}}}{2\Gamma(\frac{1}{3})}$
- $\frac{t^{\frac{-2}{3}}e^{\frac{27t}{8}}}{\Gamma(\frac{1}{3})}$
- $\frac{t^{\frac{2}{3}}e^{\frac{27t}{8}}}{\Gamma(\frac{1}{3})}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$\frac{t^{\frac{-2}{3}}e^{\frac{27t}{8}}}{2\Gamma(\frac{1}{3})}$$

4) $If\ \ L^{-1}\left[\frac{e^{-3p}}{p^2-2p+5}\right]=f(t),\ then\ \ f(t)\ \ is\ equal\ to$ **1 point**

- $f(t)=\begin{cases} e^{(t-3)}\sin 2(t-3) & \text{if } t>3, \\ 0 & \text{if } t<3 \end{cases}$
- $f(t)=\begin{cases} e^{(t-3)}\sin(t-3) & \text{if } t>3, \\ 0 & \text{if } t<3 \end{cases}$
- $f(t)=\begin{cases} \frac{1}{2}e^{(t-3)}\cos 2(t-3) & \text{if } t>3, \\ 0 & \text{if } t<3 \end{cases}$
- $f(t)=\begin{cases} \frac{1}{2}e^{(t-3)}\sin 2(t-3) & \text{if } t>3, \\ 0 & \text{if } t<3 \end{cases}$

No, the answer is incorrect.

Score: 0

Accepted Answers:

$$f(t)=\begin{cases} \frac{1}{2}e^{(t-3)}\sin 2(t-3) & \text{if } t>3, \\ 0 & \text{if } t<3 \end{cases}$$

5) $L[te^{3t}\sin 3t]$ *is equal to* **1 point**

$$\frac{6(p+3)}{(p^2-6p+18)^2}$$

$$\frac{6(p-3)}{(p^2-6p+18)^2}$$

$$\frac{6(p-3)}{(p^2+6p+18)^2}$$

$$\frac{6(p+3)}{(p^2+6p+18)^2}$$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$$\frac{6(p-3)}{(p^2-6p+18)^2}$$

6) $L\left[\frac{\sin^2 t}{t}\right]$ *equals to* ***1 point***

$$\frac{1}{4}\ln\left(\frac{p^2+4}{p^2}\right)$$

$$\frac{1}{2}\ln\left(\frac{p^2+4}{p^2}\right)$$

$$\frac{1}{2}\ln\left(\frac{p^2+2}{p^2}\right)$$

$$\ln\left(\frac{p^2+4}{p^2}\right)$$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$$\frac{1}{4}\ln\left(\frac{p^2+4}{p^2}\right)$$

7) $L^{-1}[\cot^{-1}(1+p)]$ *is equal to* ***1 point***

$$\frac{e^{-t}\cos t}{t}$$

$$\frac{e^{-t}\sin t}{t^2}$$

$$\frac{e^{-t}\sin t}{t}$$

$$\frac{e^{-t}\cos t}{t^2}$$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{e^{-t}\sin t}{t}$

8) $L\left[\int_0^t \frac{1-e^{-2u}}{u}du\right]$ *equals to* **1 point**

- $\frac{2}{p}\ln\left(1+\frac{2}{p}\right)$
- $\frac{1}{p}\ln\left(1+\frac{1}{p}\right)$
- $\frac{1}{p}\ln\left(1+\frac{2}{p}\right)$
- $\frac{1}{p}\ln\left(1-\frac{2}{p}\right)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{1}{p}\ln\left(1+\frac{2}{p}\right)$

9) *The convolution of* $\sin\omega t$ *and* $\cos\omega t$ *is equal to* **1 point**

- $t^2\sin\omega t$
- $\frac{1}{2}t\sin\omega t$
- $t\sin\omega t$
- $\frac{1}{2}t\cos\omega t$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\frac{1}{2}t\sin\omega t$

10) *The value of the integral* $\int_0^\infty \frac{\cos 6t-\cos 4t}{t}dt$ *is equal to* **1 point**

- $\ln\left(\frac{2}{3}\right)$
- $\ln\left(\frac{1}{3}\right)$
-

$\ln\left(\frac{4}{3}\right)$

$\ln\left(\frac{8}{3}\right)$

No, the answer is incorrect.
Score: 0

Accepted Answers:
$\ln\left(\frac{2}{3}\right)$

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