Module 4 - Assignment 4 Part 1 - Short Answers

Started: Sep 22 at 10:31pm

Quiz Instructions

See the **Assignments (https://jhu.instructure.com/courses/106702/pages/assignments)** page for expectations, grading details, and how to submit your solutions.

Note: This assignment is due by **day 7 of Module 4**.

Question 1 5 pts

Compute the Laplace transform of $\left(t^2-2\right)u\left(t-1\right)$

- (●) $e^{-s}\left(\frac{2}{s^3}+\frac{2}{s^2}-\frac{1}{s}\right)$
- ( ) $e^{-s}\left(\frac{2}{s^3}+\frac{1}{s^2}+\frac{2}{s}\right)$
- ( ) $e^{-2s}\left(\frac{2}{s^3}+\frac{2}{s^2}+\frac{1}{s}\right)$
- ( ) $e^{-2s}\left(\frac{2}{s^3}-\frac{1}{s}\right)$

Question 2 5 pts

Compute the Laplace transform of

$$f(t)=\begin{cases} t \text{ for } 0\le t<1 \\ e^t \text{ for } 1\le t \end{cases}$$

- (●) $\frac{1}{s^2}+e^{-s}\left(\frac{e^1}{s-1}-\frac{1}{s}-\frac{1}{s^2}\right)$
- ( ) $e^{-s}\left(\frac{2}{s-1}-\frac{1}{s}-\frac{1}{s^2}\right)$
- ( ) $\frac{1}{s}+e^{-s}\left(\frac{1}{s-1}-\frac{1}{s}-\frac{1}{s^2}\right)$
- ( ) $\frac{1}{s}+e^{s}\left(\frac{e^1}{s-1}-\frac{1}{s}-\frac{1}{s^2}\right)$

Question 3 5 pts

Compute the inverse Laplace transform of $\frac{3+2s}{s^2+4}$

- $\frac{3}{2}\sin(2t) + \cos(2t)$
- $\sin(2t) + \frac{3}{2}\cos(2t)$
- $\sin(2t) + 2\cos(2t)$
- **(selected)** $\frac{3}{2}\sin(2t) + 2\cos(2t)$

Question 4 5 pts

Compute the inverse Laplace transform of $\frac{3+s}{(s-2)(s+1)}$

- $\frac{10}{3}e^{t} - \frac{2}{3}e^{-t}$
- $\frac{5}{3}e^{2t} - \frac{4}{3}e^{-2t}$
- **(selected)** $\frac{5}{3}e^{2t} - \frac{2}{3}e^{-t}$
- $\frac{5}{2}e^{3t} - \frac{2}{3}e^{-t}$

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