Assignment Math45-Homework-WEEK-13 due 12/01/2020 at 11:59pm PST

1. (1 point)

Use linearity and known computations for the Laplace transform to compute $\mathcal{L}\left\{\frac{\sin(2t)}{7}-5\right\}$.

• A.
$$\mathcal{L}\left\{\frac{\sin(2t)}{7} - 5\right\} = \frac{2}{s^2 + 4} - 5$$

• B.
$$\mathcal{L}\left\{\frac{\sin(2t)}{7} - 5\right\} = \frac{2}{7(s^2 + 2)} - \frac{5}{s}$$

• C.
$$\mathcal{L}\left\{\frac{\sin(2t)}{7} - 5\right\} = \frac{2}{7(s^2 + 4)} - \frac{5}{s}$$

• D.
$$\mathcal{L}\left\{\frac{\sin(2t)}{7} - 5\right\} = \frac{s}{7(s^2 + 4)} - \frac{5}{s}$$

2. (1 point)

Use linearity and known computations for the Laplace transform to compute $\mathcal{L}\left\{2e^{4t} + 6\cos(3t)\right\}$.

• A.
$$\mathcal{L}\left\{2e^{4t} + 6\cos(3t)\right\} = \frac{2}{s-4} + \frac{6s}{s^2+9}$$

• B.
$$\mathcal{L}\left\{2e^{4t} + 6\cos(3t)\right\} = \frac{2}{s-4} + \frac{3}{s^2+9}$$

• C.
$$\mathcal{L}\left\{2e^{4t} + 6\cos(3t)\right\} = \frac{4}{s^2 - 16} + \frac{6s}{s^2 + 9}$$

• D.
$$\mathcal{L}\left\{2e^{4t} + 6\cos(3t)\right\} = \frac{4}{s-4} + \frac{6s}{s^2+3}$$

3. (1 point)

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Use linearity and known computations for the inverse Laplace transform to compute $\mathcal{L}\left\{\frac{5s-7}{s^2+2}\right\}$.

• A.
$$\mathcal{L}^{-1}\left\{\frac{5s-7}{s^2+2}\right\} = 5\sin\left(\sqrt{2}t\right) - \frac{7}{\sqrt{2}}\cos\left(\sqrt{2}t\right)$$

• B.
$$\mathcal{L}^{-1}\left\{\frac{5s-7}{s^2+2}\right\} = 5\cos\left(\sqrt{2}t\right) - 7\sin\left(\sqrt{2}t\right)$$

• C.
$$\mathcal{L}^{-1}\left\{\frac{5s-7}{s^2+2}\right\} = 5\cos\left(\sqrt{2}t\right) - \frac{7}{\sqrt{2}}\sin\left(\sqrt{2}t\right)$$

• D.
$$\mathcal{L}^{-1}\left\{\frac{5s-7}{s^2+2}\right\} = \frac{7}{2}\cos\left(\sqrt{2}t\right) - 5\sin\left(\sqrt{2}t\right)$$

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