

POP QUIZ

Inverse Laplace Transform - First Shifting

Choose the correct answer for the following question of inverse laplace transform by using first shifting

1 The solution for question

$$L^{-1} \left\{ \frac{3}{2s-6} \right\}$$

$$\begin{aligned} L^{-1} \left\{ \frac{3}{2s-6} \right\} &= L^{-1} \left\{ \frac{3}{2(s-3)} \right\} \\ &= \frac{3}{2} L^{-1} \left\{ \frac{1}{(s-3)} \right\} \\ &= \frac{3}{2} e^{-3t} \left\{ \frac{1}{s} \right\} \\ &= \frac{3}{2} e^{-3t} \end{aligned}$$

a. True

b. False



2 The solution for question $L^{-1} \left\{ \frac{8}{s+6} \right\}$

$$\begin{aligned} L^{-1} \left\{ \frac{8}{s+6} \right\} &= 8L^{-1} \left\{ \frac{1}{s+6} \right\} \\ &= 8e^{-6t} \left\{ \frac{1}{s} \right\} \\ &= \underline{8e^{-6t}} \end{aligned}$$

a. True

b. False

$$\begin{aligned} 1+2 &= 3 \\ 3+5 &= \end{aligned}$$



3 The solution for question

$$L^{-1} \left\{ \frac{3}{(s-4)^2-36} \right\}$$

$$\begin{aligned} L^{-1} \left\{ \frac{3}{(s-4)^2-36} \right\} &= 3e^{4t} L^{-1} \left\{ \frac{1}{s^2-6^2} \right\} \\ &= \frac{3}{6} e^{4t} L^{-1} \left\{ \frac{6}{s^2-6^2} \right\} \\ &= \frac{1}{2} e^{4t} \sinh 6t \end{aligned}$$

a. True

b. False

