Find the solution 
$$x(t)$$
 to  $\dfrac{d^2x}{dt^2}+3\dfrac{dx}{dt}+2x=0$ , with initial conditions:  $x(0)=1$ ,  $x'(0)=0$ .

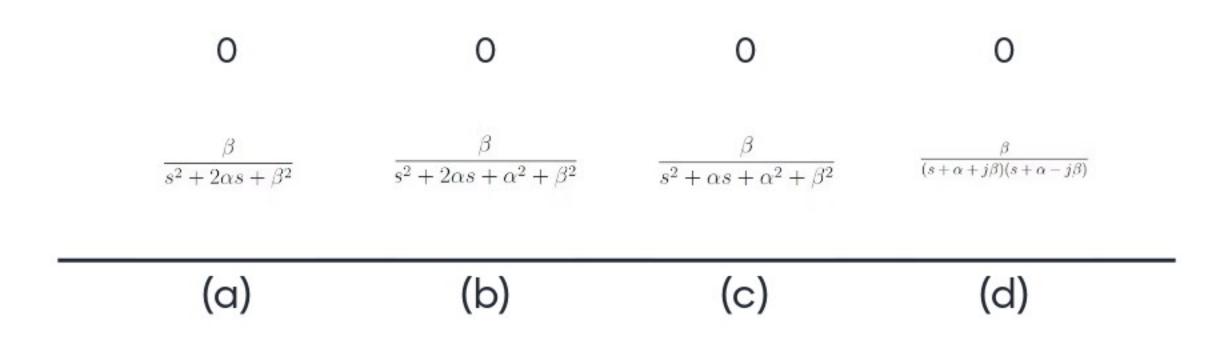
0 0 0 
$$2e^{-t} + e^{-2t}$$
  $2e^{-t} - e^{-2t}$   $2e^{t} - e^{2t}$ 

Find the solution 
$$x(t)$$
 to  $\dfrac{d^2x}{dt^2}+2\dfrac{dx}{dt}+2x=0$ , with initial conditions:  $x(0)=1$ ,  $x'(0)=0$ .

0 0 0 
$$\frac{\frac{2}{\sqrt{2}}e^{-t}\cos(t-\frac{\pi}{4})}{\frac{2}{\sqrt{2}}e^{-t}\sin(t)} \qquad \frac{\frac{2}{\sqrt{2}}e^{-t}\sin(t-\frac{\pi}{4})}{\frac{2}{\sqrt{2}}e^{-t}\sin(t-\frac{\pi}{4})}$$

## 3. Compute the Laplace Transform of

$$y(t) = e^{-\alpha t} \sin(\beta t) 1(t)$$



## 6. Compute the inverse Laplace Transform of

$$\frac{3s+4}{s^2+3s+2}.$$

0 0 0 
$$e^{-2t} + e^{-3t}$$
  $e^{-t} + 2e^{-2t}$   $e^{t} + e^{2t}$  (a) (b) (c)