

1. Write a MATLAB code to find $L\{e^{-2t}\sqrt{t} + t^2 \sin t + t u(t-2) + \delta(t-1)\}$. and execute it.

2. Write a MATLAB code to find $L\{f(t)\}$ where $f(t) = \begin{cases} t & \text{if } 0 < t < 1 \\ t^2 & \text{if } 1 < t < 2 \\ 1 & \text{if } t > 2 \end{cases}$

and execute it.

3. Write a MATLAB code to find $L^{-1}\left\{\frac{2s+1}{s(s+2)(s^2+4)}\right\}$ and execute it.

4. Write a MATLAB code to find the Taylor series expansion of $f(x, y) = \cos(xy)$ in powers of $x-1$ and $y-\frac{\pi}{2}$ up to four terms and execute it.