Engineering Mathematics-II
Practice questions

Laplace Transform

1. Find the Laplace transform of $cos(\sqrt{t})$
2. Find the Laplace transform of $\dfrac{e^{at}-e^{bt}}{t^{\frac{3}{2}}}$
3. Prove that $\displaystyle\int_0^\infty \dfrac{e^{-\sqrt{2}t}sinht sint}{t}dt = \dfrac{\pi}{8}$

Inverse Laplace Transform

1. Find the inverse Laplace transform of $\dfrac{\sqrt{s}+9}{s^{\frac{7}{2}}}$
2. Find the inverse Laplace transform of $\dfrac{s^2}{(s-1)(s^2+1)}$
3. Find the inverse Laplace transform of $\sqrt{s-a}-\sqrt{s-b}$

Fourier Series

1. Find the Fourier series of $x + x^2$ in $-\pi < x < \pi$.
2. Find the Fourier series to represent x^2 in the interval $(-l, l)$.
3. Expand $f(x) = x, 0 < x < 2$ in a half range sine and cosine series.
4. Find the complex form of the Fourier series expansion of sint $(0 < t < \pi)$, $f(t + \pi) = f(t)$.
5. The following values of x and y are given. Expand y in the form of a Fourier series upto the second harmonic.

x	0	2	4	6	8	10	12
y	9	18.2	24.4	27.8	27.5	22	9

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