

Laplace Problems for Practice 3

Find Laplace Transforms of the following

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| 1. $\mathcal{L}\{te^{-10t}\}$ | 2. $\mathcal{L}\{t^3e^t\}$ |
| 3. $\mathcal{L}\{t \cos 2t\}$ | 4. $\mathcal{L}\{t \sinh 3t\}$ |
| 5. $\mathcal{L}\{t \sinh t\}$ | 6. $\mathcal{L}\{t^2 \cos t\}$ |
| 7. $\mathcal{L}\{te^{2t} \sin 6t\}$ | 8. $\mathcal{L}\{te^{-3t} \cos 3t\}$ |

9. Solve $y'' - y = t$, $y(0) = 1$, $y'(0) = 1$.

10. Solve $x'' + \omega^2 x = \cos \omega t$, $x(0) = 0$, $x'(0) = 0$.