

**MAT 2384-Practice Problems on
Laplace Transforms-**

Find the Laplace transform of each of the following functions.

1. e^{2-3t}
2. $\cos^2(2t)$
3. $e^t \cosh(2t)$
4. $\sin(3t) \cos(3t)$
5. $t^2 e^{-2t}$
6. $e^{-2t} \cos(3t)$
7. $e^{-t} \cos^2\left(\frac{1}{2}t\right)$
8. $\sinh t \cos t$
9. $(t+1)^2 e^{-3t}$
10. $(t-1)^2 u(t-1)$
11. $u(t-1)(t^2 - 5t + 1)$
12. $t^2 e^{-3t} \sin 4t$
13. $t e^{-2t} u(t-3)$
14. $e^{-2t} u(t-3)$
15. $e^t * e^{-t} \sin 4t$
16. $\sin wt * \cos(wt)$
17. $t * e^{-3t}$
18. $u(t-1) * t^2$
19. $u(t-3) * e^{-2t}$
20. $t e^{-3t} \cos t$
21. $f(t) = \begin{cases} 0 & t > 2 \\ t^2 & 0 < t < 2 \end{cases}$
22. $f(t) = \begin{cases} 0 & t > 2 \\ e^t & 0 < t < 2 \end{cases}$
23. $f(t) = \begin{cases} 0 & 0 < t < \frac{\pi}{2} \\ \sin 2t & t > \frac{\pi}{2} \end{cases}$
24. $f(t) = \begin{cases} 1 - e^{-t} & t > 2 \\ 0 & 0 < t < 2 \end{cases}$