

Laplace Transform Table for Final Exam - Dr. Loveless

| $f(t) = \mathcal{L}^{-1}\{F(s)\}$ | $F(s) = \mathcal{L}\{f(t)\}$ |
|-----------------------------------|---------------------------------------|
| 1 | $\frac{1}{s}$ |
| e^{at} | $\frac{1}{s-a}$ |
| $\cos(bt)$ | $\frac{s}{s^2+b^2}$ |
| $\sin(bt)$ | $\frac{b}{s^2+b^2}$ |
| $e^{at}\cos(bt)$ | $\frac{s-a}{(s-a)^2+b^2}$ |
| $e^{at}\sin(bt)$ | $\frac{b}{(s-a)^2+b^2}$ |
| t^n | $\frac{n!}{s^{n+1}}$ |
| $t^n e^{at}$ | $\frac{n!}{(s-a)^{n+1}}$ |
| $u_c(t)$ | $\frac{e^{-cs}}{s}$ |
| $\delta_c(t)$ | e^{-cs} |
| $u_c(t)f(t-c)$ | $e^{-cs}F(s)$ |
| $e^{at}f(t)$ | $F(s-a)$ |
| $tf(t)$ | $-\frac{d}{ds}(\mathcal{L}\{f(t)\})$ |
| y' | $s\mathcal{L}\{y\} - y(0)$ |
| y'' | $s^2\mathcal{L}\{y\} - sy(0) - y'(0)$ |