

**MATH2010 – Analysis of Ordinary Differential Equations  
First Semester Examination, June, 2010**

TABLE OF LAPLACE TRANSFORMS

$f(t)$	$F(s)$
1	$\frac{1}{s}$
$e^{at}$	$\frac{1}{s-a}$
$t^n$	$\frac{n!}{s^{n+1}}$
$\cos bt$	$\frac{s}{s^2 + b^2}$
$\sin bt$	$\frac{b}{s^2 + b^2}$
$e^{at}f(t)$	$F(s-a)$
$tf(t)$	$-\frac{d}{ds}F(s)$
$\frac{f(t)}{t}, \quad (\lim_{t \rightarrow 0^+} f(t)/t \text{ exists})$	$\int_s^\infty F(\sigma) d\sigma$
$g(t) = \begin{cases} 0, & t < c, \\ f(t-c), & t > c. \end{cases} = f(t-c)u(t-c)$	$e^{-sc}F(s) \quad c > 0$
$\int_0^t f(\tau)g(t-\tau)d\tau$	$F(s)G(s)$
$f(t+p) = f(t), \quad t > 0$	$\frac{1}{1-e^{-ps}} \int_0^p e^{-st} f(t) dt$
$f^{(n)}(t)$	$s^n F(s) - s^{n-1}f(0) - s^{n-2}f'(0) - \dots - f^{(n-1)}(0)$