Table of Laplace Transforms:

 $\mathcal{L}\left\{1\right\} = \frac{1}{2}$ 

$$\mathcal{L}\left\{t\right\} = \frac{1}{s^2}$$

$$\mathcal{L}\left\{t^n\right\} = \frac{n!}{s^{n+1}}$$

$$\frac{7\pi}{\sqrt{2}}$$

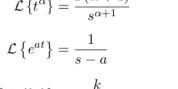
$$\mathcal{L}\left\{t^{-1/2}\right\} = \frac{\sqrt{\pi}}{s^{1/2}}$$

$$\mathcal{L}\left\{t^{1/2}\right\} = \frac{\sqrt{\pi}}{2s^{3/2}}$$

 $\mathcal{L}\left\{t^{1/2}\right\} = \frac{\sqrt{\pi}}{2e^{3/2}}$ 

$$\mathcal{L}\left\{t^{\alpha}\right\} = \frac{\Gamma(\alpha+1)}{s^{\alpha+1}}$$

$$\mathcal{L}\left\{e^{at}\right\} = \frac{1}{s-a}$$



$$\mathcal{L}\left\{e^{at}\right\} = \frac{1}{s-a}$$

$$\mathcal{L}\left\{\sin(kt)\right\} = \frac{k}{s^2 + k^2}$$

$$\mathcal{L}\left\{\sin(kt)\right\} = \frac{k}{s^2 + k^2}$$

$$\mathcal{L}\left\{\cos(kt)\right\} = \frac{s}{s^2 + k^2}$$

$$\mathcal{L}\left\{\cos(kt)\right\} = \frac{s}{s^2 + k^2}$$

$$\mathcal{L}\left\{\sinh(kt)\right\} = \frac{k}{s^2 + k^2}$$

$$\mathcal{L}\left\{\cos(kt)\right\} = \frac{1}{s^2 + k^2}$$

$$\mathcal{L}\left\{\sinh(kt)\right\} = \frac{k}{s^2 - k^2}$$

 $\mathcal{L}\left\{\cosh(kt)\right\} = \frac{s}{s^2 - k^2}$ 

$$\mathcal{L}\left\{\cos(kt)\right\} = \frac{s}{s^2 + k^2}$$

$$\mathcal{L}\left\{\sinh(kt)\right\} = \frac{k}{s^2 - k^2}$$

$$s^{2} + k^{2}$$

$$h(kt) \} = \frac{k}{s^{2} - k^{2}}$$

$$s(kt)\} = \frac{s}{s^2 + k^2}$$
$$s(kt)\} = \frac{k}{s^2 + k^2}$$

$$\frac{k^2}{k^2}$$

 $\mathcal{L}\left\{f^{(n)}(t)\right\} = s^n F(s) - s^{n-1} f(0) - \dots - f^{(n-1)}(0)$ 

 $(f * g)(t) = \int_0^t f(\tau)g(t - \tau) d\tau$ 

 $\mathcal{L}\left\{f*q\right\} = F(s)G(s)$ 

$$\mathcal{L}\left\{t\cos(kt)\right\} = \frac{s^{-1}}{(s^{2} + t^{2})}$$

$$\mathcal{L}\left\{e^{at}f(t)\right\} = F(s - t^{2})$$

$$\mathcal{L}\left\{\mathcal{U}(t - a)\right\} = \frac{e^{-as}}{s^{-1}}$$

$$\mathcal{L}\left\{t\cos(kt)\right\} = \frac{s^2 - k^2}{(s^2 + k^2)^2}$$
$$\mathcal{L}\left\{e^{at}f(t)\right\} = F(s - a)$$

 $\mathcal{L}\left\{f(t-a)\mathcal{U}(t-a)\right\} = e^{-as}F(s)$ 

 $\mathcal{L}\left\{q(t)\mathcal{U}(t-a)\right\} = e^{-as}\mathcal{L}\left\{q(t+a)\right\}$ 

 $\mathcal{L}\left\{t^n f(t)\right\} = (-1)^s \frac{d^n}{ds^n} F(s)$ 

$$\mathcal{L}\{t\sin(kt)\} = \frac{2ks}{(s^2 + k^2)^2}$$

$$\mathcal{L}\{t\cos(kt)\} = \frac{s^2 - k^2}{(s^2 + k^2)^2}$$

 $\mathcal{L}\left\{te^{at}\right\} = \frac{1}{(s-a)^2}$ 

 $\mathcal{L}\left\{t^n e^{at}\right\} = \frac{n!}{(s-a)^{n+1}}$ 

 $\mathcal{L}\left\{e^{at}\sin(kt)\right\} = \frac{k}{(s-a)^2 + k^2}$ 

 $\mathcal{L}\left\{e^{at}\cos(kt)\right\} = \frac{s-a}{(s-a)^2 + k^2}$ 

$$\frac{(k^2)^2}{(k^2)^2}$$

$$(a^{2})^{2}$$