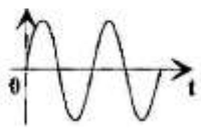
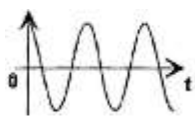
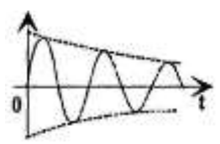
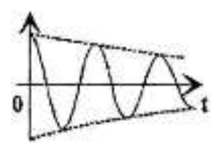
Allure	**Fonction $f(t)$**	**Transformée de Laplace $F(p) = \mathcal{L}(f(t))$**	**Pôles de $F(p)$**
	$t \to \delta(t)$ Impulsion de DIRAC	1 ★	RAS
	$t \to f(t) = u(t)$ Echelon unitaire	$F(p) = \frac{1}{p}$ ★	0
	$t \to f(t) = tu(t)$ Rampe	$F(p) = \frac{1}{p^2}$ ★	0 *Double*
	$t \to f(t) = t^n u(t)$ Fonction puissance	$F(p) = \frac{n!}{p^{n+1}}$	0 *D'ordre $n+1$*
	$t \to f(t) = e^{-at} u(t)$ Exponentielle	$F(p) = \frac{1}{p+a}$	$-a$
	$t \to f(t) = te^{-at} u(t)$ $t \to f(t) = \frac{t^{n-1}}{(n-1)} e^{-at} u(t)$	$F(p) = \frac{1}{(p+a)^2}$ $F(p) = \frac{1}{(p+a)^n}$	$-a$ *Multiple*
	$t \to f(t) = \sin \omega t \, u(t)$ Sinus	$F(p) = \frac{\omega}{p^2 + \omega^2}$	$\pm j\omega$
	$t \to f(t) = \cos \omega t \, u(t)$ Cosinus	$F(p) = \frac{p}{p^2 + \omega^2}$	$\pm j\omega$
	$t \to f(t) = e^{-at} \sin \omega t \, u(t)$ Sinus amorti $t \to f(t) = ???$	$F(p) = \frac{\omega}{(p+a)^2 + \omega^2}$ $F(p) = \frac{\omega}{[(p+a)^2 + \omega^2]^n}$	$-a \pm j\omega$ *Multiple*
	$t \to f(t) = e^{-at} \cos \omega t \, u(t)$ Cosinus amorti $t \to f(t) = ???$	$F(p) = \frac{p+a}{(p+a)^2 + \omega^2}$ $F(p) = \frac{p+a}{[(p+a)^2 + \omega^2]^n}$	$-a \pm j\omega$ *Multiple*

$t \to f(t)$	$F(p)$ ★
$t \to f'(t)$	$\mathcal{L}(f'(t)) = pF(p) - f(0^+)$ ★
$t \to f''(t)$	$\mathcal{L}(f''(t)) = p^2F(p) - pf(0^+) - f'(0^+)$ ★
$\begin{cases} t \to f'(t) \\ f(0^+) = 0 \end{cases}$	$\mathcal{L}(f'(t)) = pF(p)$ ★
....	....
$t \to f^{(n)}(t)$	$\mathcal{L}\left(f^{(n)}(t)\right) = p^nF(p) - p^{n-1}f(0^+) - p^{n-2}f'(0^+) - \cdots - f^{(n-1)}(0^+)$
$\begin{cases} t \to f^{(n)}(t) \\ f(0^+) = 0 \\ \dots \\ f^{(n-1)}(0^+) = 0 \end{cases}$	$\mathcal{L}(f^n(t)) = p^nF(p)$ ★
$\begin{cases} t \to \int_0^t f(t)dt = f_p(t) \\ f_p(0^+) = 0 \end{cases}$ f_p primitive de f	$\mathcal{L}\left(\int_0^t f(t)dt\right) = \frac{F(p)}{p}$ ★
$t \to t^nf(t)$	$\mathcal{L}(t^nf(t)) = (-1)^nF^{(n)}(p)$
$t \to e^{-at}f(t)$	$\mathcal{L}(e^{-at}f(t)) = F(p+a)$
Théorème du retard	$\mathcal{L}(f(t-T)) = e^{-Tp}F(p)$ ★
Théorème de la valeur finale	$\lim_{t \to +\infty} f(t) = \lim_{p \to 0^+} pF(p)$ ★
Théorème de la valeur initiale	$\lim_{t \to 0^+} f(t) = \lim_{p \to +\infty} pF(p)$
Equivalents $Q(p) \underset{0^+}{\sim} Q_{eq}^{0^+}(p)$ $Q(p) \underset{+\infty}{\sim} Q_{eq}^{+\infty}(p)$ $\lim_{p \to 0^+} Q(p) = \lim_{p \to 0^+} Q_{eq}^{0^+}(p)$ $\lim_{p \to +\infty} Q(p) = \lim_{p \to +\infty} Q_{eq}^{+\infty}(p)$	$\frac{b_mp^m + \cdots + b_1p + b_0}{a_np^n + \cdots + a_1p + a_0} \underset{0^+}{\sim} \frac{b_0}{a_0}$ $\frac{b_mp^m + \cdots + b_1p + b_0}{a_np^n + \cdots + a_1p + a_0} \underset{+\infty}{\sim} \frac{b_mp^m}{a_np^n} = \frac{b_m}{a_n}p^{m-n}$ ★