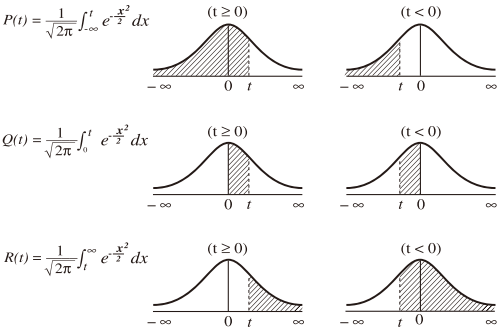


[22]

$$\bar{x} = \frac{\sum x}{n}$$
$$s_x = \sqrt{\frac{\sum x^2 - n\bar{x}^2}{n - 1}}$$
$$\bar{y} = \frac{\sum y}{n}$$
$$s_y = \sqrt{\frac{\sum y^2 - n\bar{y}^2}{n - 1}}$$

$$\sigma_x = \sqrt{\frac{\sum x^2 - n\bar{x}^2}{n}}$$
$$\Sigma x = x_1 + x_2 + \cdots + x_n$$
$$\Sigma x^2 = x_1^2 + x_2^2 + \cdots + x_n^2$$
$$\sigma_y = \sqrt{\frac{\sum y^2 - n\bar{y}^2}{n}}$$
$$\Sigma xy = x_1y_1 + x_2y_2 + \cdots + x_ny_n$$
$$\Sigma y = y_1 + y_2 + \cdots + y_n$$
$$\Sigma y^2 = y_1^2 + y_2^2 + \cdots + y_n^2$$

[23]



$t = \frac{x - \bar{x}}{\sigma_x}$ Standardization conversion formula
Formule de conversion de standardisation

[24] [MODE] (2-VLE)

$$\begin{bmatrix} a_1x + b_1y = c_1 \\ a_2x + b_2y = c_2 \end{bmatrix} \quad |D| = \quad \begin{vmatrix} a_1 & b_1 \\ a_2 & b_2 \end{vmatrix}$$

$$\begin{cases} 2x + 3y = 4 \\ 5x + 6y = 7 \end{cases} \quad \begin{matrix} 2 \text{ [ENT]} 3 \text{ [ENT]} 4 \text{ [ENT]} \\ 5 \text{ [ENT]} 6 \text{ [ENT]} 7 \end{matrix}$$
$$x = ? \quad \text{[ENT]} [x] \quad \text{--1.}$$
$$y = ? \quad \text{[ENT]} [y] \quad \text{2.}$$
$$\det(D) = ? \quad \text{[ENT]} [\det(D)] \quad \text{--3.}$$

[25] [MODE] (3-VLE)

$$\begin{bmatrix} a_1x + b_1y + c_1z = d_1 \\ a_2x + b_2y + c_2z = d_2 \\ a_3x + b_3y + c_3z = d_3 \end{bmatrix} \quad |D| = \quad \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix}$$

$$\begin{cases} x + y - z = 9 \\ 6x + 6y - z = 17 \\ 14x - 7y + 2z = 42 \end{cases} \quad \begin{matrix} 1 \text{ [ENT]} 1 \text{ [ENT]} 1 \text{ [+/-]} \text{ [ENT]} 9 \text{ [ENT]} \\ 6 \text{ [ENT]} 6 \text{ [ENT]} 1 \text{ [+/-]} \text{ [ENT]} 17 \text{ [ENT]} \\ 14 \text{ [ENT]} 7 \text{ [+/-]} \text{ [ENT]} 2 \text{ [ENT]} 42 \end{matrix}$$
$$x = ? \quad \text{[ENT]} [x] \quad \text{3.238095238}$$
$$y = ? \quad \text{[ENT]} [y] \quad \text{--1.638095238}$$
$$z = ? \quad \text{[ENT]} [z] \quad \text{--7.4}$$
$$\det(D) = ? \quad \text{[ENT]} [\det(D)] \quad \text{105.}$$

[26] [MODE] (QUAD, CUBIC)

$$3x^2 + 4x - 95 = 0$$
$$x1 = ?$$
$$x2 = ?$$

$$\begin{matrix} 3 \text{ [ENT]} 4 \text{ [ENT]} \text{ [+/-]} 95 \\ \text{[ENT]} \\ \text{[ENT]} \end{matrix} \quad \begin{matrix} 5. \\ \\ \text{--6.333333333} \end{matrix}$$
$$\text{[2ndF]} \text{[ENT]} \quad 5.$$

$$5x^3 + 4x^2 + 3x + 7 = 0$$
$$x1 = ?$$
$$x2 = ?$$
$$x3 = ?$$

$$\begin{matrix} 5 \text{ [ENT]} 4 \text{ [ENT]} 3 \text{ [ENT]} 7 \\ \text{[ENT]} \\ \text{[2ndF]} \text{[ENT]} \\ \text{[ENT]} \\ \text{[2ndF]} \text{[ENT]} \end{matrix} \quad \begin{matrix} \text{--1.233600307} \\ \text{0.216800153} \\ \text{+ 1.043018296}_i \\ \text{0.216800153} \\ \text{-- 1.043018296}_i \end{matrix}$$

[27] [MODE] (CPLX)

$$(12-6i) + (7+15i) - (11+4i) =$$

$$\begin{matrix} \text{[MODE]} \text{[3]} \\ 12 \text{ [---]} 6 \text{ [i]} \text{[+]} 7 \text{ [---]} 15 \text{ [i]} \text{[---]} \\ \text{[---]} 11 \text{ [---]} 4 \text{ [i]} \text{[---]} \text{[=]} [x] \end{matrix} \quad \begin{matrix} 8. \\ + 5. i \\ 8. \\ + 606. i \end{matrix}$$

$$6 \times (7-9i) \times (-5+8i) =$$

$$\begin{matrix} 6 \text{ [X]} \text{[---]} 7 \text{ [---]} 9 \text{ [i]} \text{[---]} \text{[X]} \\ \text{[---]} 5 \text{ [+/-]} \text{[---]} 8 \text{ [i]} \text{[---]} \text{[=]} [x] \end{matrix} \quad \begin{matrix} 222. \\ + 606. i \end{matrix}$$

$$16 \times (\sin 30^\circ + i \cos 30^\circ) \div (\sin 60^\circ + i \cos 60^\circ) =$$

$$\begin{matrix} 16 \text{ [X]} \text{[---]} \text{[sin]} 30 \text{ [---]} \text{[+]} \\ \text{[i]} \text{[cos]} 30 \text{ [---]} \text{[---]} \text{[div]} \text{[---]} \text{[sin]} 60 \text{ [---]} \text{[+]} \\ \text{[i]} \text{[cos]} 60 \text{ [---]} \text{[---]} \text{[=]} [x] \end{matrix} \quad \begin{matrix} 13.85640646 \\ + 8. i \end{matrix}$$



$$r1 = 8, \theta 1 = 70^\circ$$
$$r2 = 12, \theta 2 = 25^\circ$$
$$\downarrow$$
$$r = ?, \theta = ?^\circ$$

$$\begin{matrix} (1 + i) \\ \downarrow \\ r = ?, \theta = ?^\circ \end{matrix} \quad \begin{matrix} \text{[2ndF]} \text{[--->xy]} 1 \text{ [---]} \text{[+]} \text{[i]} \text{[---]} \\ \text{[2ndF]} \text{[--->rθ]} [r] \\ \text{[2ndF]} \text{[---<=>]} [\theta] \end{matrix} \quad \begin{matrix} 1. \\ 1.414213562 \\ \angle 45. \end{matrix}$$

$$(2-3i)^2 =$$

$$\begin{matrix} \text{[2ndF]} \text{[--->xy]} \text{[---]} 2 \text{ [---]} 3 \text{ [i]} \text{[---]} \text{[X^2]} \\ \text{[---]} \text{[x]} \\ \text{[2ndF]} \text{[---<=>]} [y] \end{matrix} \quad \begin{matrix} \text{--5.} \\ \text{--12.}_i \end{matrix}$$

$$\frac{1}{1+i} =$$

$$\begin{matrix} \text{[---]} 1 \text{ [---]} \text{[+]} \text{[i]} \text{[---]} \text{[2ndF]} \text{[X^-1]} \text{[---]} \text{[x]} \\ \text{[2ndF]} \text{[---<=>]} [y] \end{matrix} \quad \begin{matrix} 0.5 \\ \text{--0.5}_i \end{matrix}$$

$$\text{CONJ}(5+2i) =$$

$$\begin{matrix} \text{[MATH]} \text{[0]} \text{[---]} 5 \text{ [---]} \text{[+]} 2 \text{ [i]} \text{[---]} \text{[---]} \text{[x]} \\ \text{[2ndF]} \text{[---<=>]} [y] \end{matrix} \quad \begin{matrix} 5. \\ \text{--2.}_i \end{matrix}$$

[28]

Function Fonction	Dynamic range Plage dynamique
	DEG: $ x < 10^{10}$ ($\tan x : x \neq 90 \text{ (} 2n-1 \text{))}^*$ RAD: $ x < \frac{\pi}{180} \times 10^{10}$ ($\tan x : x \neq \frac{\pi}{2} \text{ (} 2n-1 \text{))}^*$ GRAD: $ x < \frac{10}{9} \times 10^{10}$ ($\tan x : x \neq 100 \text{ (} 2n-1 \text{))}^*$
$\sin^{-1}x, \cos^{-1}x$	$ x \leq 1$
$\tan^{-1}x, \sqrt[3]{x}$	$ x < 10^{100}$
$\ln x, \log x$	$10^{-99} \leq x < 10^{100}$
y^x	$y > 0$: $-10^{100} < x \log y < 100$ $y = 0$: $0 < x < 10^{100}$ $y < 0$: $x = n$ ($0 < x < 1 : \frac{1}{x} = 2n-1, x \neq 0$)*, $-10^{100} < x \log y < 100$
$x\sqrt[y]{y}$	$y > 0$: $-10^{100} < \frac{1}{x} \log y < 100 \text{ (} x \neq 0 \text{)}$ $y = 0$: $0 < x < 10^{100}$ $y < 0$: $x = 2n-1$ ($0 < x < 1 : \frac{1}{x} = n, x \neq 0$)*, $-10^{100} < \frac{1}{x} \log y < 100$
e^x	$-10^{100} < x \leq 230.2585092$
10^x	$-10^{100} < x < 100$
$\sinh x, \cosh x, \tanh x$	$ x \leq 230.2585092$
$\sinh^{-1}x$	$ x < 10^{50}$
$\cosh^{-1}x$	$1 \leq x < 10^{50}$
$\tanh^{-1}x$	$ x < 1$
x^2	$ x < 10^{50}$
x^3	$ x < 2.15443469 \times 10^{33}$
$\sqrt{x}$	$0 \leq x < 10^{100}$
x^{-1}	$ x < 10^{100} \text{ (} x \neq 0 \text{)}$
$n!$	$0 \leq n \leq 69^*$

nPr	$0 \leq r \leq n \leq 9999999999^*$ $\frac{n!}{(n-r)!} < 10^{100}$
nCr	$0 \leq r \leq n \leq 9999999999^*$ $0 \leq r \leq 69$ $\frac{n!}{(n-r)!} < 10^{100}$
↔DEG, D°M'S	$0^\circ 0' 0.00001'' \leq x < 10000^\circ$
$x, y \rightarrow r, \theta$	$\sqrt{x^2 + y^2} < 10^{100}$
$r, \theta \rightarrow x, y$	$0 \leq r < 10^{100}$ DEG: $ \theta < 10^{10}$ RAD: $ \theta < \frac{\pi}{180} \times 10^{10}$ GRAD: $ \theta < \frac{10}{9} \times 10^{10}$
DRG ►	DEG→RAD, GRAD→DEG: $ x < 10^{100}$ RAD→GRAD: $ x < \frac{\pi}{2} \times 10^{98}$
(A+Bi)+(C+Di)	$ A + C < 10^{100}, B + D < 10^{100}$
(A+Bi)−(C+Di)	$ A - C < 10^{100}, B - D < 10^{100}$
(A+Bi)×(C+Di)	$(AC - BD) < 10^{100}$ $(AD + BC) < 10^{100}$
(A+Bi)÷(C+Di)	$\frac{AC + BD}{C^2 + D^2} < 10^{100}$ $\frac{BC - AD}{C^2 + D^2} < 10^{100}$ $C^2 + D^2 \neq 0$
→DEC →BIN →PEN →OCT →HEX AND OR XOR XNOR	DEC : $ x \leq 9999999999$ BIN : $1000000000 \leq x \leq 1111111111$ $0 \leq x \leq 111111111$ PEN : $2222222223 \leq x \leq 4444444444$ $0 \leq x \leq 222222222$ OCT : $4000000000 \leq x \leq 7777777777$ $0 \leq x \leq 3777777777$ HEX : $\text{FDABF41C01} \leq x \leq \text{FFFFFFFFF}$ $0 \leq x \leq 2540\text{BE3FF}$
NOT	BIN : $1000000000 \leq x \leq 1111111111$ $0 \leq x \leq 111111111$ PEN : $2222222223 \leq x \leq 4444444444$ $0 \leq x \leq 222222221$ OCT : $4000000000 \leq x \leq 7777777777$ $0 \leq x \leq 3777777777$ HEX : $\text{FDABF41C01} \leq x \leq \text{FFFFFFFFF}$ $0 \leq x \leq 2540\text{BE3FE}$
NEG	BIN : $1000000001 \leq x \leq 1111111111$ $0 \leq x \leq 111111111$ PEN : $2222222223 \leq x \leq 4444444444$ $0 \leq x \leq 222222222$ OCT : $4000000001 \leq x \leq 7777777777$ $0 \leq x \leq 3777777777$ HEX : $\text{FDABF41C01} \leq x \leq \text{FFFFFFFFF}$ $0 \leq x \leq 2540\text{BE3FF}$

* n, r: integer / entier

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SHARP
SHARP CORPORATION

- Physical Constants and Metric Conversions are shown in the tables.
- Les constants physiques et les conversion des unités sont indiquées sur les tableaux.

[2ndF] [CNST] 01 — 52		
No. SYMBOL UNIT	No. SYMBOL UNIT	No. SYMBOL UNIT
01 - c, c_0 m s ^{−1}	19 - μ_B J T ^{−1}	37 - eV J
02 - G m ³ kg ^{−1} s ^{−2}	20 - μ_e J T ^{−1}	38 - t K
03 - g_n m s ^{−2}	21 - μ_N J T ^{−1}	39 - AU m
04 - m_e kg	22 - μ_p J T ^{−1}	40 - pc m
05 - m_p kg	23 - μ_n J T ^{−1}	41 - $M(^{12}C)$ kg mol ^{−1}
06 - m_n kg	24 - μ_μ J T ^{−1}	42 - h J s
07 - m_μ kg	25 - λ_c m	43 - E_h J
08 - lu kg	26 - $\lambda_{c,p}$ m	44 - G_0 s
09 - e C	27 - σ W m ^{−2} K ^{−4}	45 - α^{-1}
10 - h J s	28 - N_A, L mol ^{−1}	46 - m_p/m_e
11 - k J K ^{−1}	29 - V_m m ³ mol ^{−1}	47 - M_H kg mol ^{−1}
12 - μ_0 N A ^{−2}	30 - R J mol ^{−1} K ^{−1}	48 - $\lambda_{c,n}$ m
13 - $\mathcal{E}_0$ F m ^{−1}	31 - F C mol ^{−1}	49 - c_i W m ²
14 - r_e m	32 - R_K Ohm	50 - c_2 m K
15 - α	33 - e/m_e C kg ^{−1}	51 - Z_0 Ω
16 - a_0 m	34 - $h/2m_e$ m ² s ^{−1}	52 - atm Pa
17 - R_∞ m ^{−1}	35 - γ_p s ^{−1} T ^{−1}	
18 - Φ_0 Wb	36 - K_J Hz V ^{−1}	

[2ndF] [CONV] 1 — 44		
No. UNIT	No. UNIT	No. UNIT
1 in→cm	16 kg→lb	31 J→calIT
2 cm→in	17 °F→°C	32 calIT→J
3 ft→m	18 °C→°F	33 hp→W
4 m→ft	19 gal (US)→ℓ	34 W→hp
5 yd→m	20 ℓ→gal (US)	35 ps→W
6 m→yd	21 gal (UK)→ℓ	36 W→ps
7 mile→km	22 ℓ→gal (UK)	37 kgf/cm ² →Pa
8 km→mile	23 fl oz (US)→mℓ	38 Pa→kgf/cm ²
9 n mile→m	24 mℓ→fl oz (US)	39 atm→Pa
10 m→n mile	25 fl oz (UK)→mℓ	40 Pa→atm
11 acre→m ²	26 mℓ→fl oz (UK)	41 mmHg→Pa
12 m ² →acre	27 J→cal	42 Pa→mmHg
13 oz→g	28 cal→J	43 kgf·m→J
14 g→oz	29 J→cal15	44 J→kgf·m
15 lb→kg	30 cal15→J	