

$$(1) e^2 \approx 7,38905609893065$$

$$(2) \ln(1) = 0$$

$$(3) \log(10) = 1$$

$$(4) \log_{12}(12) = 1$$

$$(5) \cos\left(\frac{\pi}{6}\right) = \frac{\sqrt{3}}{2}$$

$$(6) \sin\left(\frac{2\pi}{3}\right) = \frac{\sqrt{3}}{2}$$

$$(7) \tan\left(\frac{\pi}{4}\right) = 1$$

$$(8) \cos^{-1}\left(\frac{1}{2}\right) = \frac{1}{3} \cdot \pi$$

$$(9) \sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = \frac{1}{3} \cdot \pi$$

$$(10) \tan^{-1}(2) \approx 1,10714871779409$$

$$(11) \frac{d}{dx}(x^2 - 2x - 3) = 2 \cdot x - 2$$

$$(12) g(x) := \frac{1}{1-x}$$

$$(13) g'(x) = \frac{1}{x^2 - 2 \cdot x + 1}$$

$$(14) g'(x) = \frac{1}{(x-1)^2}$$

$$(15) \frac{d^5}{dx^5} x^6 = 720 \cdot x$$

$$(16) \int \ln(x) dx = x \ln(x) - x$$

$$(17) \int_{-2}^{\frac{3}{2}} \log(x) dx = \frac{4 \ln(-2) + 3 \ln\left(\frac{3}{2}\right) - 7}{2 \ln(10)}$$

$$(18) \lim_{n \rightarrow +\infty} \frac{1}{n^2} = 0$$

$$(19) \lim_{x \rightarrow 2^-} \frac{1}{2-x} = +\infty$$

$$(20) \sum_{k=1}^{11} n^3 = 11 \cdot n^3$$

$$(21) \sum_{k=1}^{11} k^3 = 4356$$

$$(22) \prod_{k=1}^{11} k^3 = 63601470092869632000000$$

$$(23) 2a^2 - 3a + 1 = 0 \quad S = \left\{ \frac{1}{2}; 1 \right\}$$

$$(24) 2a^2 - 3a + 1 = 5 \quad S = \left\{ \frac{-\sqrt{41} + 3}{4}; \frac{\sqrt{41} + 3}{4} \right\}$$

$$(25) \begin{cases} x + y = 1 \\ -x + 2y = 1 \end{cases} \quad S = \left\{ \left( \frac{1}{3}; \frac{2}{3} \right) \right\}$$

$$(26) y' - 2y = x \quad y(x) = c_0 e^{2 \cdot x} - \frac{1}{2} \cdot x + \frac{-1}{4}$$

$$(27) \begin{cases} y'' + 3y = 0 \\ y'(0) = 2 \\ y(0) = -1 \end{cases} \quad y(t) = -\cos(\sqrt{3} \cdot t) + \frac{2 \cdot \sqrt{3}}{3} \sin(\sqrt{3} \cdot t)$$

$$(28) 3a \cdot x + x \Big|_{a=-2} = -5 \cdot x$$

$$(29) \left\lfloor \frac{8}{3} + 1 \right\rfloor = 3$$

(30) PGCD (123456; 123789)

$$= 3$$

(31) PPCM (123456; 123789)

$$= 5094164928$$

(32) quotient (123456  $\div$  789)

$$= 156$$

(33) reste (123456  $\div$  789)

$$= 372$$

(34) 123456  $\div$  789

$$[q; r] = [156; 372]$$

(35) 123456 mod 789

$$= 372 \text{ mod } 789$$

(36)  $\text{Re}\left(\frac{1}{2} - 3i\right)$

$$= \frac{1}{2}$$

(37)  $\text{Im}\left(\frac{1}{2} - 3i\right)$

$$= -3$$

(38)  $\left|\frac{1}{2} - 3i\right|$

$$= \frac{\sqrt{37}}{2}$$

(39)  $\text{Arg}\left(\frac{1}{2} - 3i\right)$

$$= -\tan^{-1}(6)$$

(40)  $\text{Arg}\left(\frac{1}{2} - 3i\right)$

$$\approx -1,40564764938027$$

(41)  $\overline{\frac{1}{2} - 3i}$

$$= \frac{1 + 6i}{2}$$

(42)  $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} \cdot \begin{pmatrix} x \\ y \end{pmatrix}$

$$= \begin{pmatrix} x + 2 \cdot y \\ 3 \cdot x + 4 \cdot y \end{pmatrix}$$

(43)  $I_6$

$$= \begin{pmatrix} 1 & 0 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 0 & 1 \end{pmatrix}$$

(44)  $5 \cdot I_4$

$$= \begin{pmatrix} 5 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 \\ 0 & 0 & 5 & 0 \\ 0 & 0 & 0 & 5 \end{pmatrix}$$

(45)  $5 \cdot \begin{pmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{pmatrix}$

$$= \begin{pmatrix} 5 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 \\ 0 & 0 & 5 & 0 \\ 0 & 0 & 0 & 5 \end{pmatrix}$$

(46)  $\det \left( \begin{pmatrix} 5 & 0 & 0 & 0 \\ 0 & 5 & 0 & 0 \\ 0 & 0 & 5 & 0 \\ 0 & 0 & 0 & 5 \end{pmatrix} \right)$

$$= 625$$

(47)  ${}^t \begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix}$

$$= \begin{pmatrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{pmatrix}$$

(48) 

Valeurs	1	2	5	7	10	15	19
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$$N = 7$$

$$\bar{x} = \frac{59}{7}$$

$$V = \frac{1874}{49}$$

$$\sigma = \frac{\sqrt{1874}}{7}$$

$$Min = 1$$

$$Q_1 = 2$$

$$Med = 7$$

$$Q_3 = 15$$

$$Max = 19$$

(49) 

Valeurs	1	2	5	7	10	15	19
Eff ou Fréq	2	3	2	2	5	4	1

$$N = 19$$

$$\bar{x} = \frac{161}{19}$$

$$V = \frac{10616}{361}$$

$$\sigma = \frac{2 \cdot \sqrt{2654}}{19}$$

$$Min = 1$$

$$Q_1 = 2$$

$$Med = 10$$

$$Q_3 = 15$$

$$Max = 19$$

$$(50) 54!$$

$$= 230843697339241380472092742683027581083278564571807941132288000000000000$$

$$(51) \binom{n}{4}$$

$$= \frac{n!}{24(n-4)!}$$