Ex: $\begin{pmatrix} 0 & 1 & 2 \\ 1 & 1 & 1 \\ 0 & 2 & 0 \end{pmatrix} x / x_i \in MIR^3$

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Lomé 02-03-2022

$\lim_{0^-} \frac{1}{x} = -\infty$

LECTEUR

Oui, personne ne sait
Quand l'œuf a été
Moi je, vous l'avez
Déjà dit, je ne suis
Ni la tête ni la queue
Mais vous, vous l'êtes
C'est pourquoi vous
Devez veiller sur vous.

D.E.L

$F(x) = \underbrace{ax^{\alpha} + bx^{\beta} + c}_{Q(x)} + \frac{d}{G(x)}$

$\varepsilon(x)$

$\text{Lim}\ \varepsilon = 0$

$$\lim_{0} \frac{(1+x)}{x} = \lim_{\infty} xln(1 + \frac{1}{x})$$

$$= \lim_{\infty} xln(1) + xlnx^{-1})$$

$$= \lim_{\infty} xln(1) - xlnx^{1})$$

Car lnx ∈]0 ;1]

y' = ay

$\frac{y'}{y} = a$

Ln lyl = ax+b

$e^{ln lyl} = e^{ax+b}$

lyl = e^{ax+b}

$10^x = e^{xln10}$

$\lim_{x \to Df} F(x) = \omega \begin{cases} finie \\ ou \\ infinie \end{cases}$

lyl = e^{ax+b}

y = $\pm\, e^{ax+b}$

y = $k\, e^{ax+b}$

Cercle (I ; r) $(x - x_I)^2 + (y - y_I)^2 = r$

$m_p = \frac{m'_p . m_r}{m_{r'}}$

C'est le rendez-vous du donner et recevoir

Ce livre intitulé Math KESSOU dont nous avons pris du temps à formuler des lois de la plus haute importance de tout l'univers resterait un guide à son lecteur et à son exerceur.

KESSOUGBO K. Olivier

Dit Ismaël Yesu

FORME

$a^2 - 2ab + b^2 = (a-b)^2$

AVEC A= a^2 , B= b^2

Ex : $4a^2 - 3b^2$

$(2a-\sqrt{3}b)^2 - 4\sqrt{3}ab$

$(2a-\sqrt{3}b)^2 - (\sqrt{4\sqrt{3}ab})^2$

$(a+b)^3=a^3+3a^2b+3ab^2+b^3$

Avec 3ab=X

Ex: $8a^3-12a^2b+6ab^2-b^3$

Exo:

Complète

$Ax^2+bx+c= a(\quad)(\quad)$

$\frac{b^2-\Delta}{4a^2} = (\quad)(\quad)$

$\Delta =$

$7(x+\frac{3}{14})^2 - \frac{9}{28} = \cdots x^2 + \cdots x$

$x^2 + 5x = \cdots (x + \cdots)^2 - \frac{25}{4}$

$3\left[\left(\frac{x}{2}\right) + \cdots\right]^2 - (\ldots\ldots)^2 = \frac{3}{4}x^2 - \pi x + 1$

$(y+1)^3= y^3+\ldots+\ldots+\ldots$

$2(t\ldots\ldots)^2-\ldots\ldots = 2t-3t$

$9m^2-7m= (\quad)(\quad)$

$3k^2+\ldots\ldots= 3(k+\ldots\ldots)^2-\frac{1}{3}$

$(2d-vt)^3 =$

$\cos^2\varphi - 2\sin(2\varphi) - 3 = \cdots$

$(i^3 + \frac{1}{4})^2 - \frac{13}{8} = \cdots i^{\cdots} + i^3 + \cdots$

$5r^2+20r-10 = (r+\ldots)^2 - (\ldots\ldots)^2$

$Bx^2+cx+a =$

$\propto^6 - \omega^{18} =$

On donne: $\pi = 3,14$

$\text{Sin}^2\theta = 1 - Cos^2\theta = 1 + Sin2\theta$

FONCTIONS

FORMULES

$(\vec{E}) \xrightarrow{\Delta} (\vec{E}, +)$

x $\dashrightarrow \begin{cases} a({x_i}^m)^n + b({x_j}^o)^p + \cdots \\ c{x_k}^q + r \end{cases}$

(a;b;c)$\in IR^3$

(m;n;q)$\in IR^3$

(i;j;k)$\in IR^3$

Ex: $\begin{pmatrix} 0 & 1 & 2 \\ 1 & 1 & 1 \\ 0 & 2 & 0 \end{pmatrix} X / x_i \in MIR^3$

b$\begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix} X / x_j \in MIR^2$

Cx² : $x_K \in IR$

Exo

Complète

A	b	c	m	n	q	r
1	0	0	2	1	2	0

F(x) =

a	b	c	m	n	q	r	
							G
4	2	3	4	1/2	4	7	H
1		1	3	2	4	$\sqrt{3}/2$	J
							K
							L
$\sqrt{2}/2$		-9	1/2	3	3	0	N
							W
							Z

G(x)= $\sqrt{x}$
$H(x) =$

H(x) =

I(x) = $\frac{F(x)}{G(x)}$

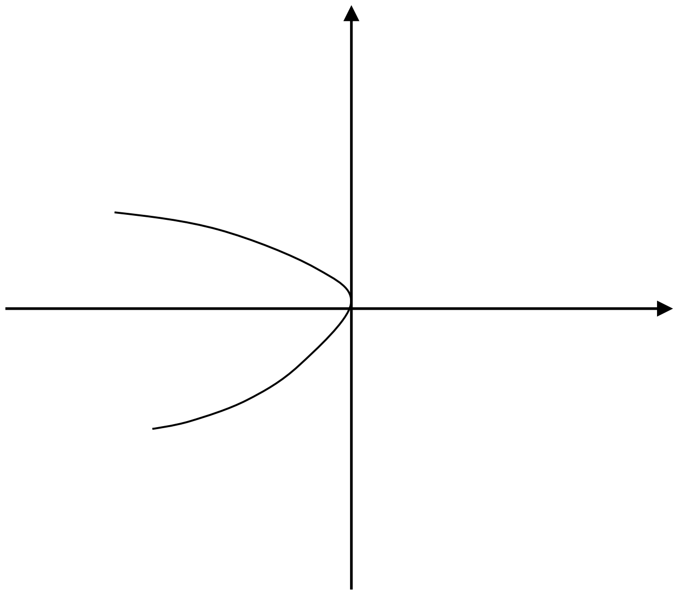
J(x) =

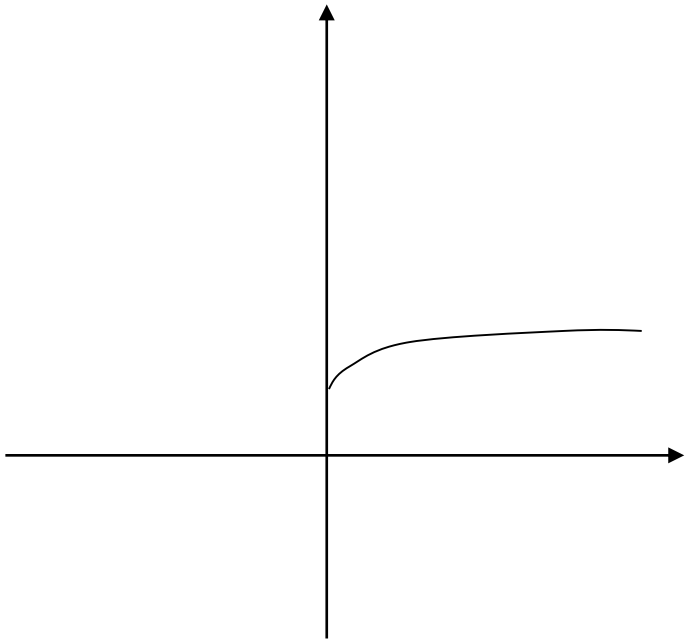
K(x) = Sin⁶(x) + Sin⁴(x) + ½

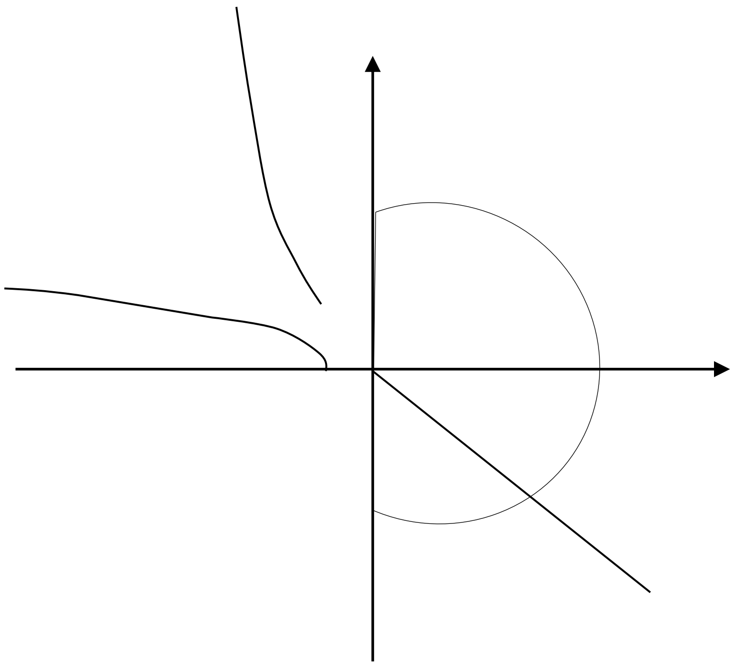
L(x) = $\frac{F(x)+H(x)}{J(x)+I(x)}$

N(x) =

W(x) = $\text{Cos}\frac{\pi}{6}x^4 - tan\frac{\pi}{4}x^3 + x^2$







$$\begin{cases} \vec{k} = 2\,\vec{\propto} - 3\vec{\omega} \\ 2\vec{\omega} = 6\vec{k} + \vec{\alpha} \\ \vec{k} = \frac{1}{2}\vec{\alpha} + \frac{1}{2}\vec{\omega} \end{cases}$$

Det = $\begin{vmatrix} -1 & 6 & -1 \\ 2 & 1 & 1/2 \\ -3 & -2 & 1/2 \end{vmatrix}$

= -1 [(1)(1/2)-(-2)(1/2)]-6[(2)(1/2)-(-3)(1/2)]-[(2)(-2)-(-3)(1)]

= -(3/2)-6(-1/2)-(-1) = $\frac{5}{2}$

Le triplet ($\vec{k}, \vec{\propto}, \vec{\omega}$) forme une base.

$\overrightarrow{IM} = \frac{3}{4}\vec{\omega}$

DOMAINE

IN ϵZϵ IDϵ IRϵ C ϵ IE

Df = {$\forall x \in IE; y = f(x) \in IE$}

Ex: Soit F(x) = $\sqrt{\propto x^a + \beta x^b + \gamma}$ avec $(\propto; \beta; \gamma) \in IR^3$

(a ;b)∈ IR^2

D_F =]0 ; ∞[

$\forall\ x \ \in IR, \alpha x^a + \beta x^b + \gamma$ doit appartenir à $IR^*{}_+$

Exo :

Complète

G(x) = ln($\alpha x^a + \beta x^b + \gamma$)

D_G =

H(x) = $e^{(\alpha x^a + \beta x^b + \gamma)}$

D_H =

HoG(x) =

D_{HoG} =

I(x) = Cos(x)

DI =

J(x) = Sin($\alpha x^a + \beta x^b + \gamma$)

DJ =

K(x) =

DK= $]-\frac{\sqrt{2}}{2}; \frac{\sqrt{2}}{2}]$

L(x) = $\frac{\sqrt{3}}{2} Sin(x) + \frac{L(x)}{2}$

DL =

N(x) = $\frac{2+i}{2-i}$

DN =

LIMITES

$$\lim_{x \to Df} F(x) = \omega \begin{cases} finie \\ ou \\ infinie \end{cases}$$

Ex : $\lim_{x\to} \frac{x^4+7x^3+4x^2}{x^5-6x+1} = \lim_{x\to} \frac{x4}{x^5}$

$$\lim_{\infty} \frac{1}{x} = 0$$

$$\lim_{0-} \frac{1}{x} = -\infty$$

$$\lim_{0+} \frac{1}{x} = +\infty$$

$\lim_{x \to 1/2} \ln(x) = \ln(\frac{1}{2})$

= $\ln(2^{-1})$

= - ln(2)

$\lim_{o+} \ln(x) = -\infty$

$\lim_{1+} \ln(x) = 0$

$\lim_{-\infty} e^x = 0$

$\lim_{+\infty} e^x = +\infty$

$\lim_{o} e^x = 1$

Exo :

Lim$\sqrt{2x^2 + 4x + 1}$ =

Lim1O^x =

Lim$e^{(3x^2-7x+4)}$ =

Lim$\sqrt{4x^2 - 36} + \sqrt{x-3}$ =

Lim$\frac{xlnx}{2}$ =

Lim xlnx =

DERIVEE INTEGRAL

F'(x) = (x)'f(x) + x(f')

Ex: $3x^4$-8x+k

$12x^{4-1} - 8x^{1-1} + 0$

$12x^3 - 8x^0$

$12x^3 - 8$

Sin^2x

$2CosxSin^{2-1}x$

2CosxSinx

Exo

Complète

$\frac{h(x)}{P(x)} = F(x)$

F'(x) =

F'(x) =

F'(x) = h'(x) P(x) – h(x)P(x)P^{-1}(x)

A(x) =

A'(x) = $\frac{1}{x}$

B(x) = e^x

B'(x) =

2C'(x) = - $\sqrt{x}$

C(x) =

$\int(U'V) = [\quad] - \int(U'V)$

I(t) = $\int 2tB)dt$

=

I'(t) = [2t+e^t] - 2$\int e^t$

J'(t) = Sin(3t²+9)dt

=

J(t) = -6tCos(3t²+9)

RACINE/ZERO

K[o] = $\sum_{i=1}^{P}(x_i - x_o)^n = 0$

Ex : F(x) = 5x²-25

= 5(x²-5)

= 5(x-$\sqrt{5}$)(x+$\sqrt{5}$)

F(x)=0=> x=±$\sqrt{5}$

K_F[o] = $\{\pm\sqrt{5}\}$

Exo

Complète

G(t) = $3t^4$ $K_G[o] =$

$K_R[o] = \left\{\frac{\pi}{2} + 2k\pi\right\}$

R(t) =

S(t) = Cos(2t)

$K_S[o] =$

Q(t) =

$K_Q[o] = \{-e^{2m};\ +e^{-2m}\}$

U(t) = 4t² + 1

$K_U[o] =$

$V(t) = \frac{t^2-1}{t+1}$

$K_V[o] =$

$\omega(t) = (t-\alpha)(t+\sqrt{12})(t-\beta)$

=

=

$\omega(t) = t^3 + (-2+\sqrt{12}-\sqrt{\pi})t^2 - (2\sqrt{12} - 2\sqrt{\pi} + \sqrt{12\pi})t - 2\sqrt{12\pi}$

$K_\omega[o] =$

SIGNE SENS

$\forall\ x; x_o\ \epsilon IE$

$$\begin{Bmatrix} x \leq x_o /\ F(x) \leq F(x_o) \\ F\ est\ croissante \\ x \leq x_o / F(x) \geq F(x_o) : F\ est\ decroissante \end{Bmatrix}$$

Ex : Soit H(x) = $e^x + lnx$

D_H = $IR^*{}_+$

On a {2 ;4} c D_H

2<4 / H(2) = $e^2 + ln2$

$e^2 + ln2 > 0 => e^x + lnx > 0$

H est donc strictement croissante dans $IR^*{}_+$

Exo

Complete

f(t) = a Sin($\theta t) + ib\ Cos(\theta t)$

$\Bigg\{$

F est monotone sur [m ; M] / $\begin{cases} m = \\ M = \end{cases}$

Z(t) =

DZ =

Δ_Z=

$x_1 = t_1$ =

$x_2 = t_2$ =

Z est

Sur

(C_Z) est

Sur

a (CA) / A(t) = 3t+2

ARRANGEMENT

$A_p^n = \frac{p\ n!}{n\ p!} - 1$

$n! = (n_i - 1)^p$

$C_n^p = \frac{A_p^n}{p!}$

Exo

$A_2^3 = \frac{2(3-1)(2-1)}{3(2-1)} - 1 = \frac{1}{3}$

3! = (3-1) (2-1) = 2

$C_3^2 = \frac{A_3^2}{2!} = \frac{\frac{1}{3}}{2} = \frac{1}{6}$

Il est nul / Elle n'existe

D.E.L : $\frac{F\prime(\tau)}{n_r!}$ Avec $n_r \epsilon\ IN*$

Exo

Complete

$A_3^{15} =$ ________ = 7x 3 ! – 1

$A_3 = 11 \quad n! = 720$

$A_3^6 =$ ——— = ———

A^5 = 3 p! = 24

A+1 = 72 n = 10

2028! = 2028.K.2011!

K! =

$C_6^3 =$ ———

2 ! =

8 ! = 3 !

$C = \frac{\frac{1}{3}}{2!} =$

$C_8^3 =$ ——— $- 1 =$

APP L

$\forall\ (a;b;c)\epsilon IR^3$

$\forall\ (\propto;\beta)\epsilon IR^2$

$F(ax^{\propto}+bx^{\beta}+c)$

$F(ax^{\propto})+F(bx^{\beta})+F(c)$

$aF(x^{\propto})+bF(x^{\beta})+r$

Exo

E(x) = X^2-1

D_R = IR

$\begin{cases} E(0)=-1 \\ E(1)=0 \end{cases}$

$E(0)+E(1)=-1\epsilon IR$

E(x) C App L

Exo

Complete

$ln\left(\frac{x^2}{3x^3}\right)=\ln(\quad)-\ln(\quad)$

$\begin{cases} a= \\ b= \end{cases}$

Expo(5x³+4x²+ƛx+c)

$e^{5x^3}.\quad e^{4x^2}.\ e\ .\ e$

$\begin{cases} a= \\ b= \\ c=a-b \end{cases}$

$\begin{cases} \propto= \\ \beta= \\ \frac{-ƛ}{2}=\propto-\frac{\beta}{2} \end{cases}$

$\sqrt{i(t)}=2t^2-\beta t+\delta$

$i(t)=\propto t^a+\beta t^b+ƛt^c+\theta t^d+i(o)$

$i(t)=$

$\begin{cases} a= \\ b= \\ c= \\ d= \end{cases}$

$\begin{cases} \propto= \\ \beta= \\ ƛ= \\ \theta= \end{cases}$

$i(o)=9$

$\begin{cases} 3P(x)^4=2P(x) \\ -10P(x)^2=0 \end{cases}$

$\begin{cases} a= \\ b= \\ c= \end{cases}$

$\begin{cases} d= \\ \propto= \\ \beta= \end{cases}$

MOYENNE

$M = \frac{\sum x_i}{T_i}$

Exo

Complete

1	0	1	0	2	1	0	1	3
10	8	7	9	14	1	11	6	3

M =

=

=

M =

M% =

A = [X, Y]

M_A =

M_A% =

1	0	1	2	0	3	1	0	1
$\propto$	β	$-ג$	1	2β	$-\alpha$	$-ג$	3	4

M =

=

M =

M% =

$\begin{cases} \beta = \\ ג = \\ M\% = \end{cases}$ $\quad$ $\beta = 0$, $ג = 44$, $M\% =$

$\begin{cases} \beta = 50 \\ ג = 25 \\ M\% = \end{cases}$ $\quad$ $\beta = \frac{100}{3}$, $ג = 4$, $M\% =$

$\begin{cases} \beta = \\ ג = \\ M\% = 50\% \end{cases}$ $\quad$ $\beta =$, $ג =$, $M\% = 75\%$

$\begin{cases} \beta = 10 \\ ג = \\ M\% = 3ג\% \end{cases}$ $\quad$ $\beta = 0$, $ג = -40$, $M\% = \frac{\beta}{2}\%$

SUITE

$\begin{cases} U_{n+1} = U_n + r \\ U_{n+1} = qU_n \end{cases}$

Ex

$2U_n = U_n + U_n$

$= V_n + 0$

$qU_n = V_n + r$

Exo

Complete

$\begin{cases} U_o = 3 \\ U_1 = 4 \end{cases}$ $\quad$ $U_2 =$, $U_3 =$

$\begin{cases} U_2 = 5 \\ U_3 = 8 \end{cases}$ $\quad$ $U_0 =$, $U_1 =$

$\begin{cases} U_3 = \frac{3}{4} U_o \\ U_2 = 6U_o \end{cases}$ $\quad$ $q =$, $U_1 =$

$\begin{cases} U_{2n+1} = \frac{2V_{2n}}{10} \\ V_o = 4 \end{cases}$

$U_1 =$
$U_2 =$

$V_1 =$
$V_2 =$

$U_o =$
$U_{n+1} =$

$U_{n-1} =$
$U_n =$

$\frac{U_n}{U_{n-1}} =$

$2U_{n+1} + 3U_n + 8 = 0$

S =

EQUATIONS

$\begin{cases} df^{\propto+1}(x) = 0 \\ f(x) = \end{cases}$

Ex

$f^2(x) = 0$

df(x) = a

f(x) = ax+b

$\begin{cases} f(o) = 2 \\ f(2) = 0 \end{cases}$

$\begin{cases} a = 1 \\ b = 2 \end{cases}$

Y = f(x) = -x + 2

Exo

Complete

Y'' + 4Y' – 4 = 6x^2 – 10x + 8

$\begin{cases} y = ax^4 + bx^2 + cx \\ y' = \end{cases}$

$\int \frac{dy\prime}{dx} + 4 \int \frac{dy}{dx} =$

y' + 4y = 6 $\int$

=

y' + 4y = $2x^{\beta} + bx^2 + 12x$

$\begin{cases} \beta = \\ b = \end{cases}$

$\begin{cases} y = \\ y' = \end{cases}$

$\begin{cases} ax^4 + 4ax^3 + bx^2 + (2b + c)x + c \\ 2x^3 - 5x^2 + 12x \end{cases}$

$\begin{cases} 4a = 2 \\ b = \\ c = \end{cases}$

S$_G$ =

PROBABILITE

$P_r = \frac{V_i}{\sum_{i=1}^{\infty} n_i}$

Exo

Complete

$\frac{b}{12} = \frac{c}{12} = \frac{d}{12} = \frac{1}{2}$

$\frac{h}{12} = \frac{I}{12}$ Paire du dé

Un dé 3 fois

$P_r = \frac{5}{n} = \frac{}{} =$

$P_r = \frac{1}{m} = \frac{}{} =$

$P_r = \frac{a}{6} = \frac{}{} = \frac{1}{2}$

Un dé 7 fois

$P_r = \frac{c}{6} = \frac{}{} = 0.99$

Une pièce 45s

$P_r =$

Une pièce 56s

$P_r = \frac{Face}{n\text{x }2} = \frac{1}{n\text{x}2} = 75\%$

$n^{iène}{}_{fois} =$

Une pièce 2s en 8 fois

$P_r = \frac{V_i}{2 \text{ x } 8} = 90\%$

$V_i =$

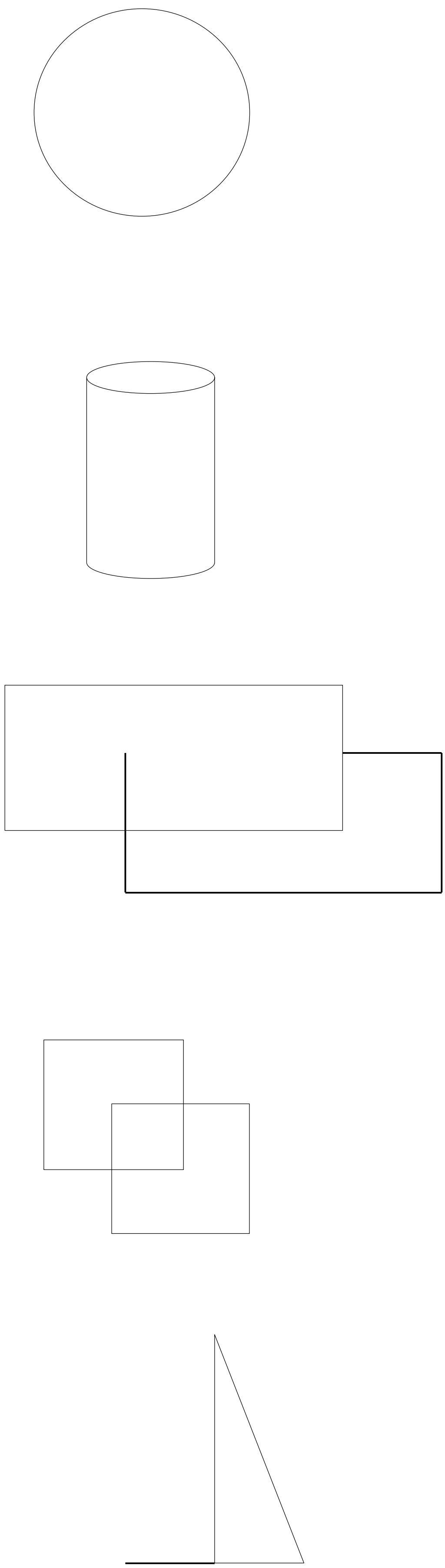
Un jeu de carte

$P_r = \frac{7}{32} = \frac{}{} = \frac{1}{8}$

$P_r = \frac{A_s\ 7\ noir}{32} = \frac{}{}$

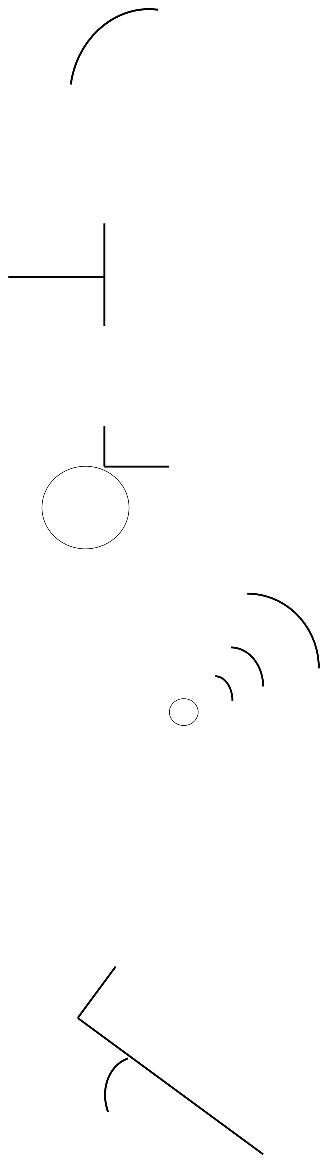
$P_r(A_s) =$ $P(7) =$

LES FIGURES



Exo

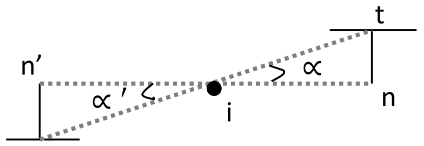
Complete



SYMETRIE

S(i ; r) = $\begin{cases} \overline{OC} = -\overline{CO} \\ \overline{OC} + \overline{CO} = \overline{O} \end{cases}$

Ex



$\propto = \propto '$

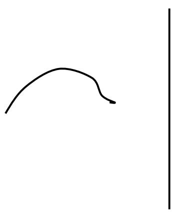
Sin$\propto \neq Sin \propto '$

$Sin \propto' = \frac{-nt}{r}$

$Cos \propto = \frac{in}{r}$

Exo

Complete

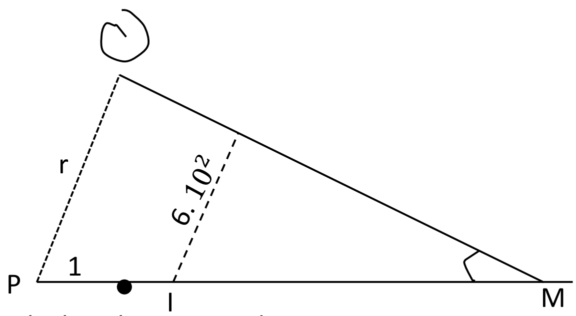


$\overline{n_i} = 2{,}5\overline{in'}$

. n'

. i

$\overline{nn'} =$



Calculons la Hauteur du trou

ECHELLE

$m_p = \frac{m'_p . m_r}{m_{r'}}$

$m_p = m_r \; x \; \frac{m_{p'}}{m_{r'}}$

$\frac{1}{m_p} = \frac{1}{m_{p'}} \left(\frac{m_r{}'}{m_r}\right)$

Exo

Complete

2 . 10^3 Km ⟷ $m_r = 3m'_r$

$m_p =$ ________

$m_p =$ ________

$m_p =$

Poteau & Borne

1 Km ⟷ $\frac{m_r}{m_{r'}} = \frac{1}{16}$

________ $= \frac{1}{m_p{}'}$

$\frac{1}{m_p{}'} =$

$m_p{}' =$

o ⟷ B

1 P_K

$\frac{1}{\quad\quad} = \frac{1}{1440}\left(\frac{1\,Km}{m_r}\right)$

$m_r =$

o ⟷ B