



As 3 partes principais

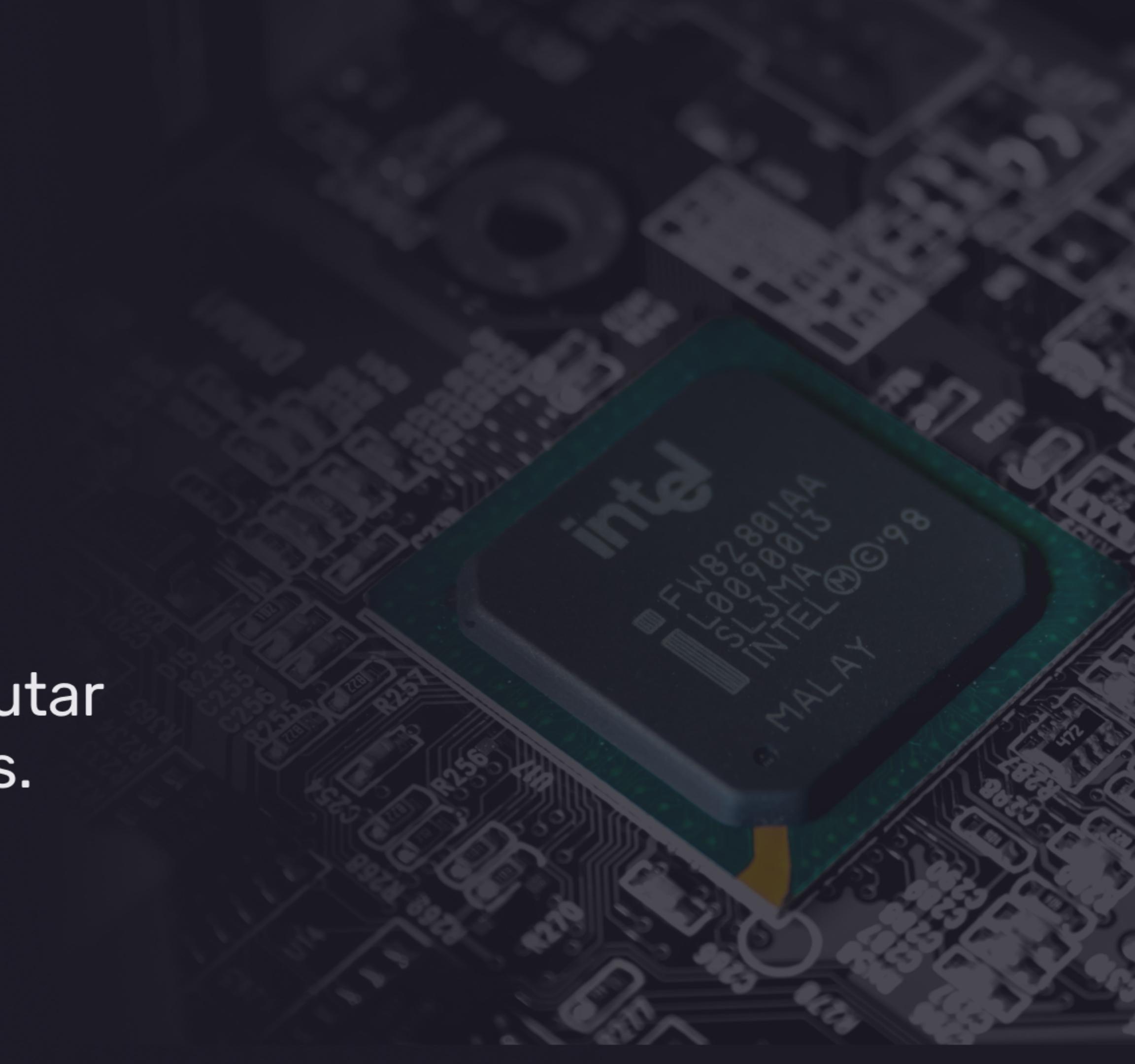
Processador, HD e memória



O Cérebro

Processador

É responsável por executar operações matemáticas.





Dispositivos de Armazenamento

HDs e SSDs

Armazenam dados de forma não
volátil (permanente).

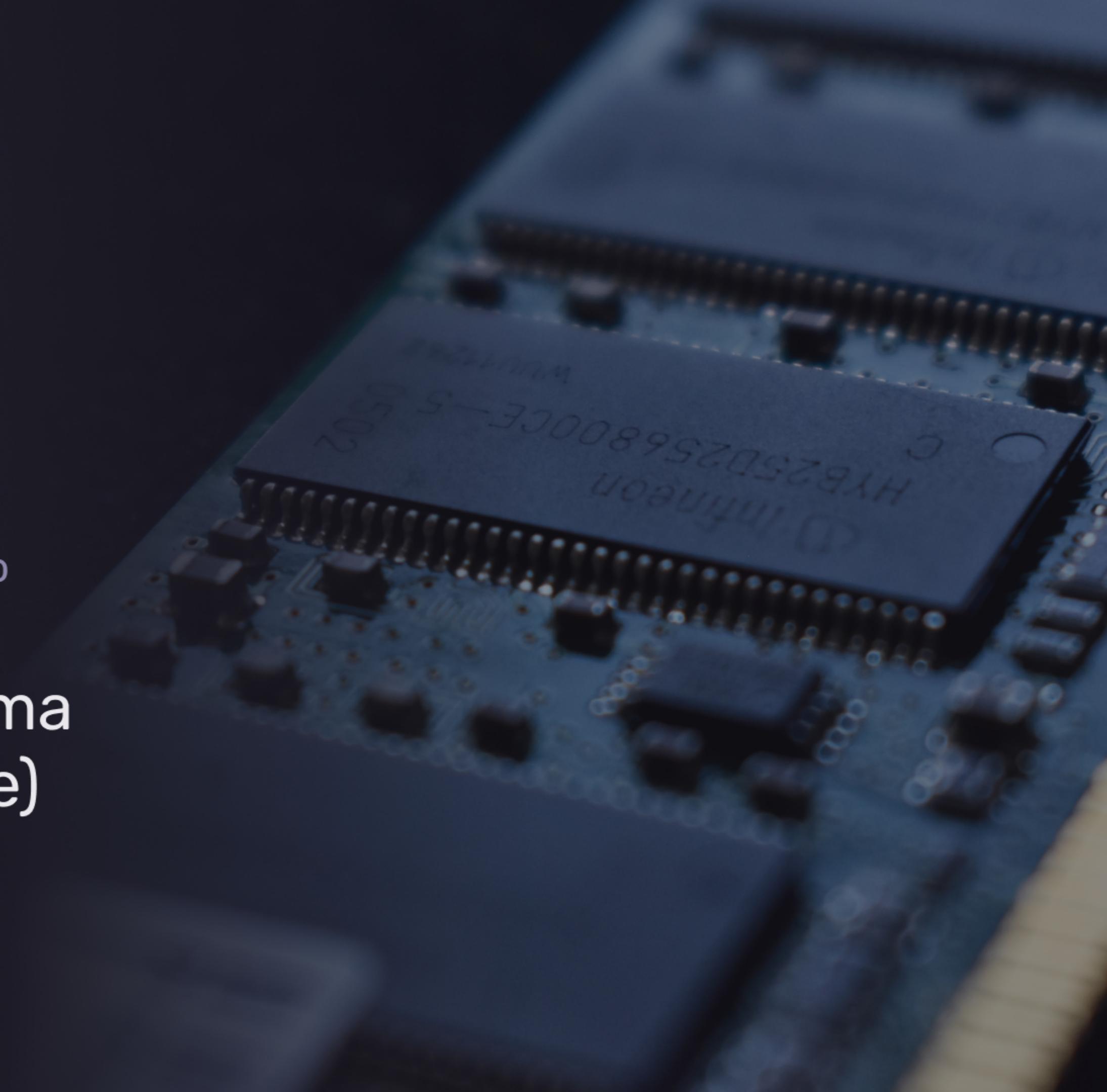




Memória

RAM - Memória de Acesso Aleatório

Amazena dados de forma
volátil (não permanente)

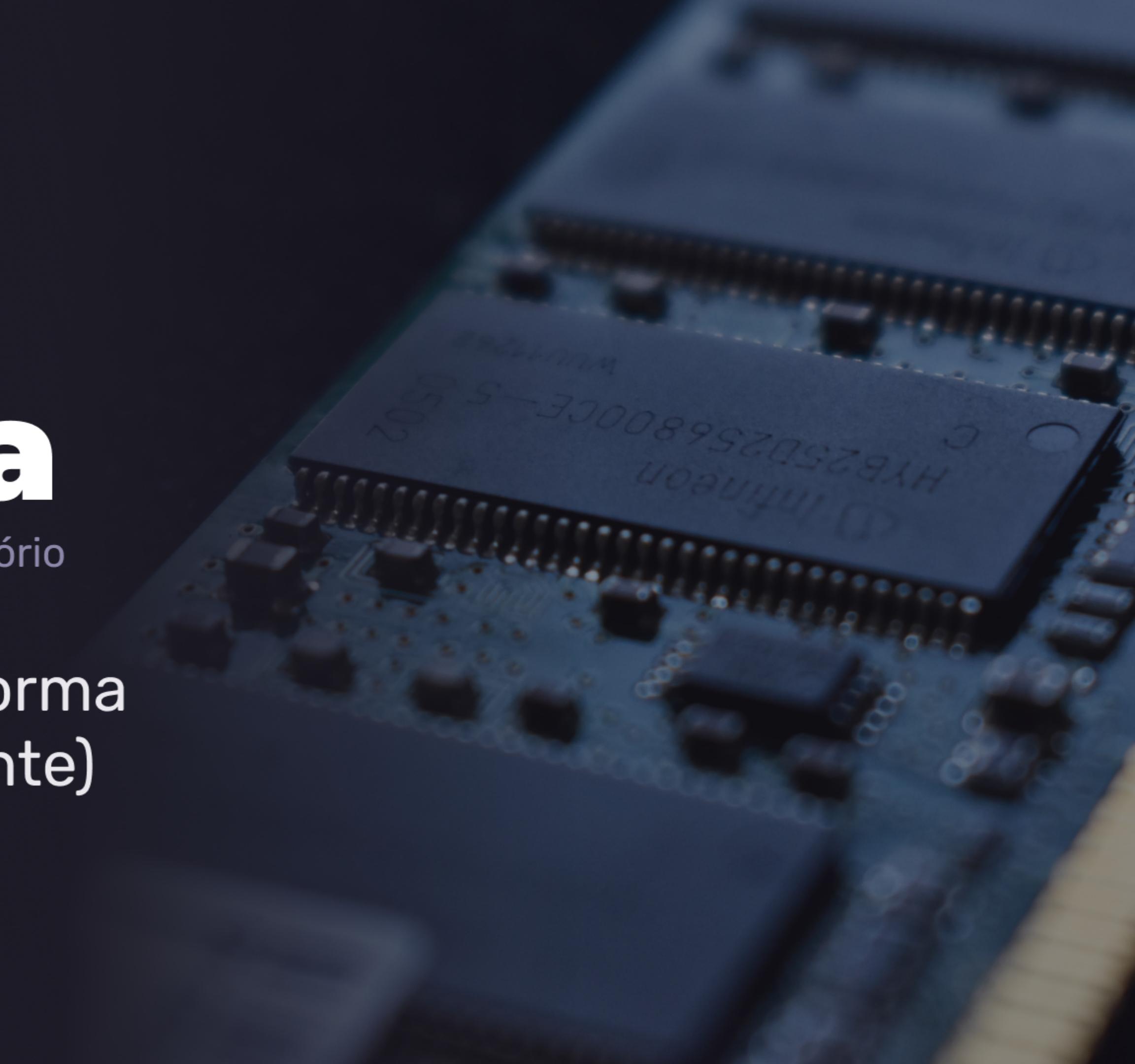


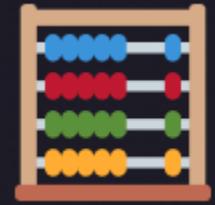


Memória

RAM - Memória de Acesso Aleatório

Amazena dados de forma
volátil (não permanente)





Entre zeros e uns.

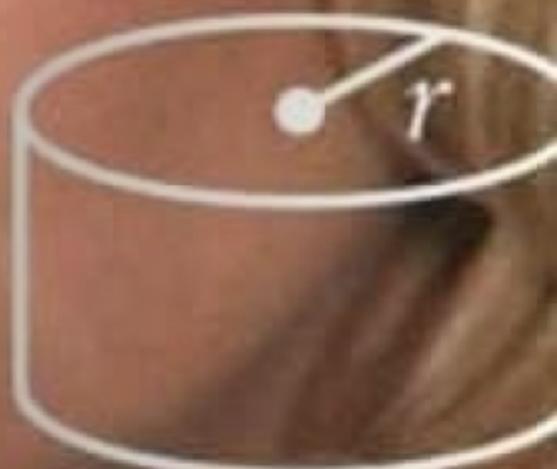
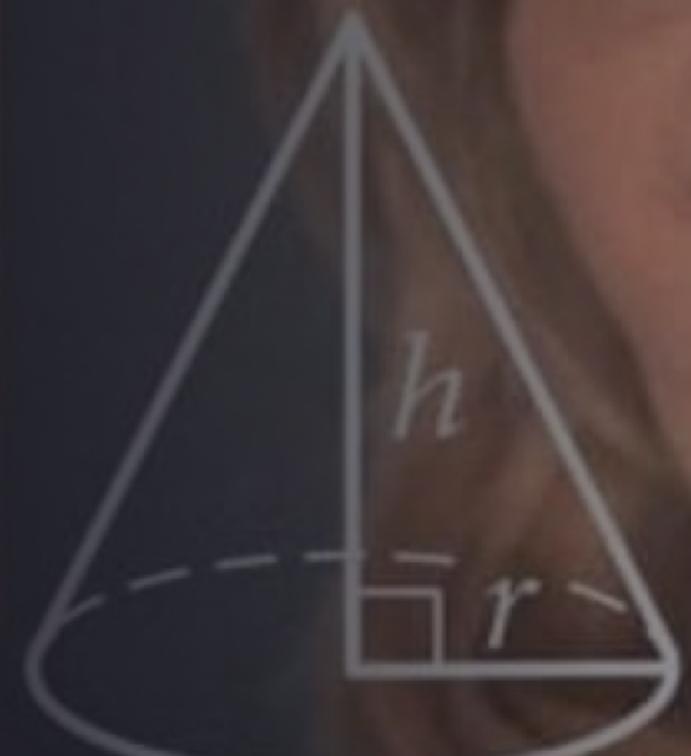
O tal código binário.

Matemática

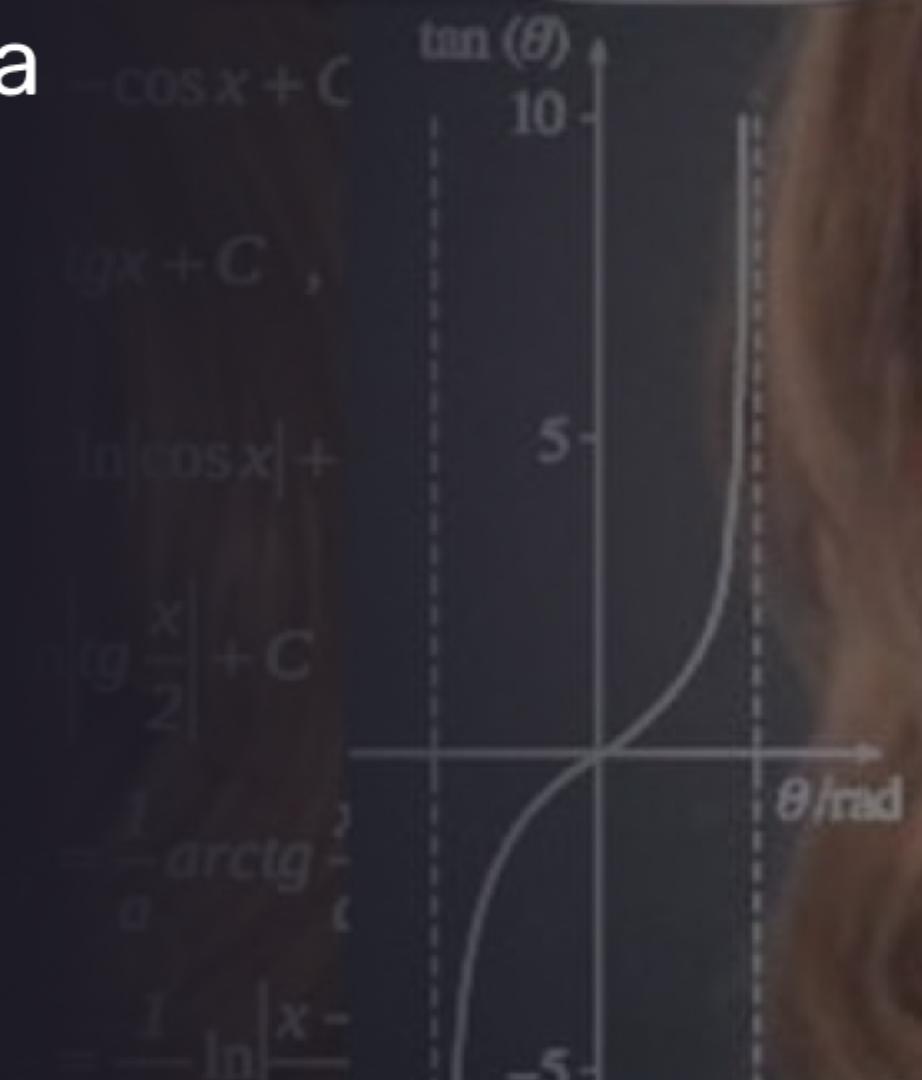
mas não muito, fica calmo!

Você não precisa saber matemática
avançada hoje em dia para ser um
desenvolvedor web

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$



$$ax^2 + bx + c = 0$$

$$a(x^2 + \frac{b}{a}x + \frac{c}{a}) = 0$$

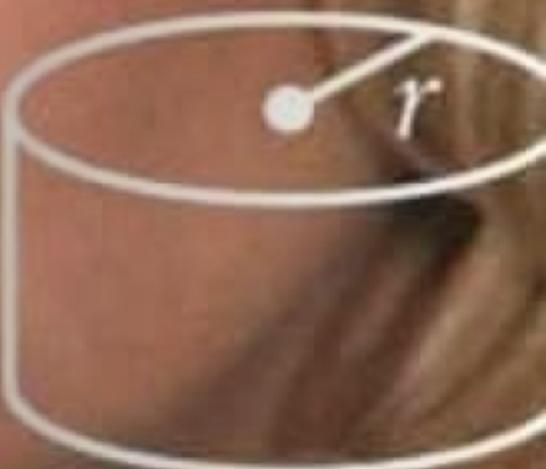
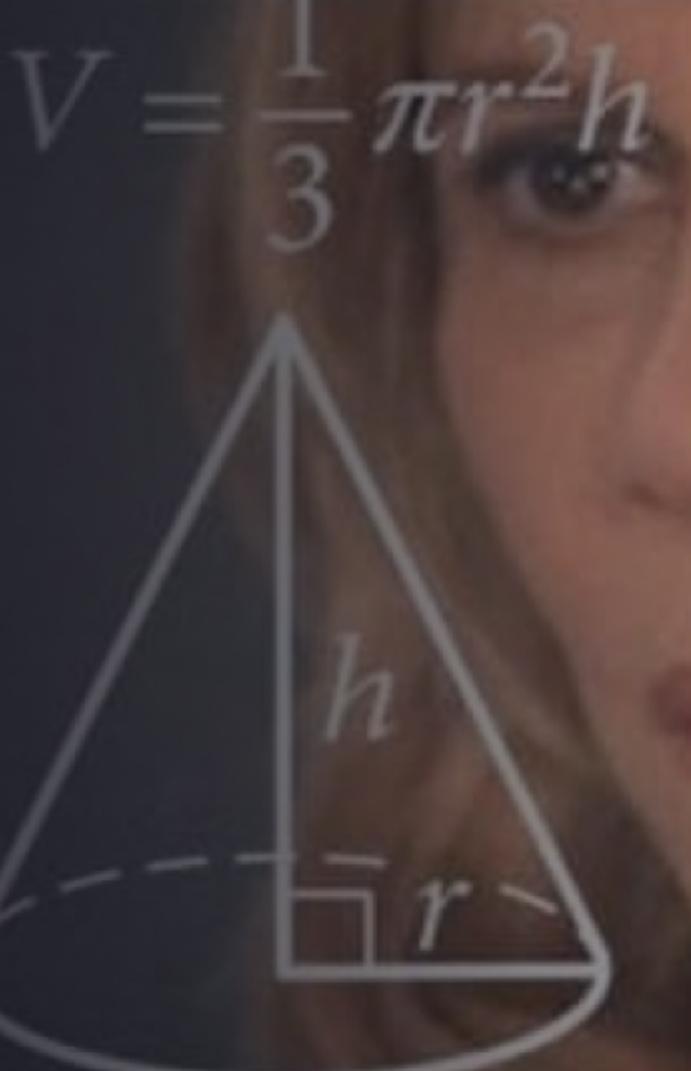
$$x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 + \frac{c}{a} = 0$$

$$(x + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a^2} = 0$$

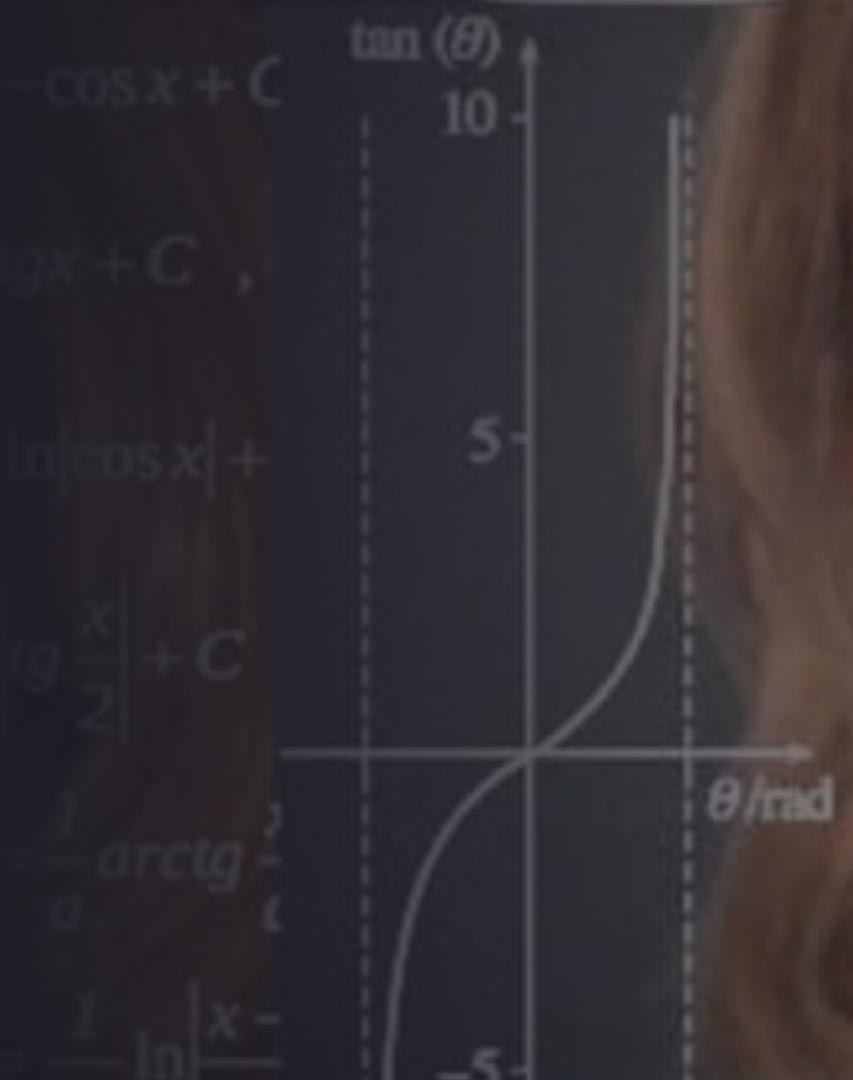
Sistemas numéricicos

Decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9



$$V = \pi r^2 h$$



$$\begin{aligned} ax^2 + bx + c &= 0 \\ a(x^2 + \frac{b}{a}x + \frac{c}{a}) &= 0 \\ x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 + \frac{c}{a} &= 0 \\ (x + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} &= 0 \end{aligned}$$

Sistemas numéricicos



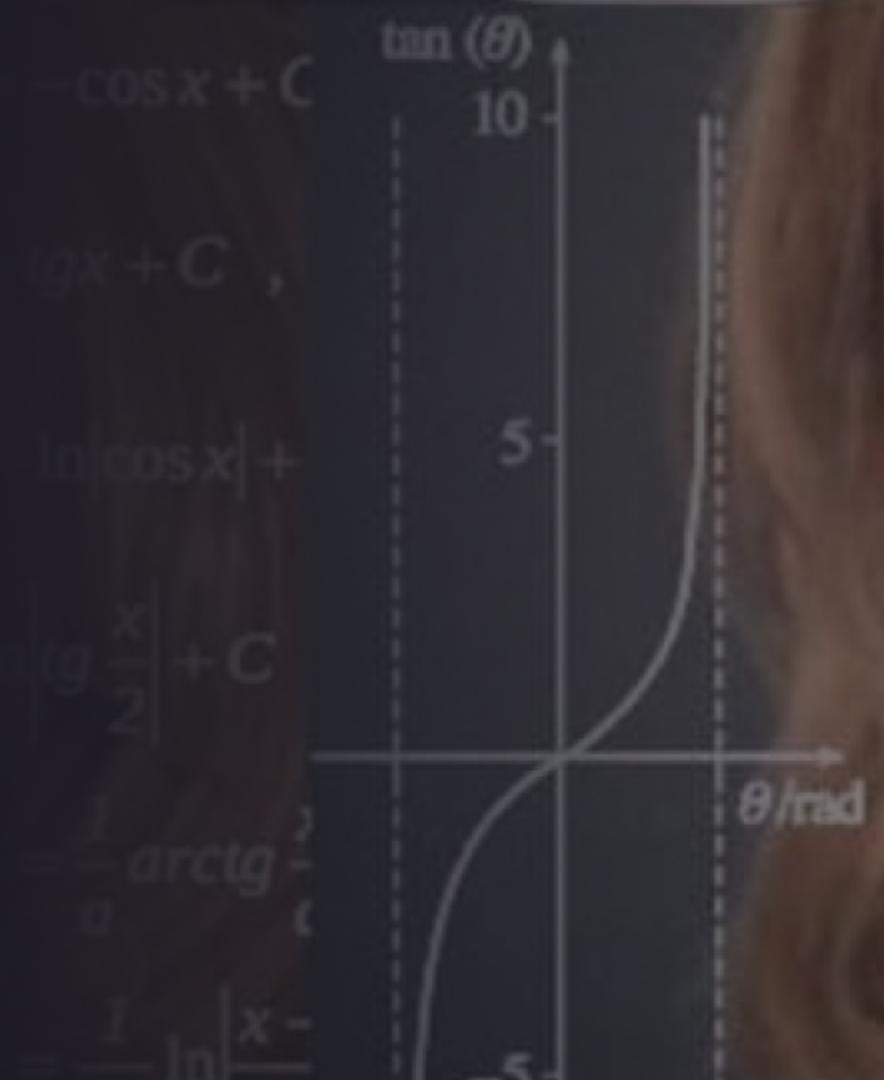
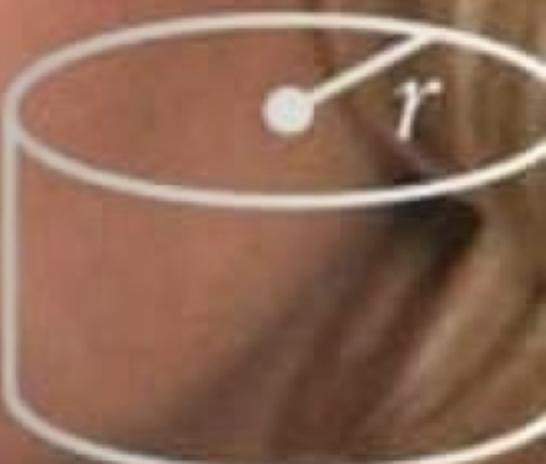
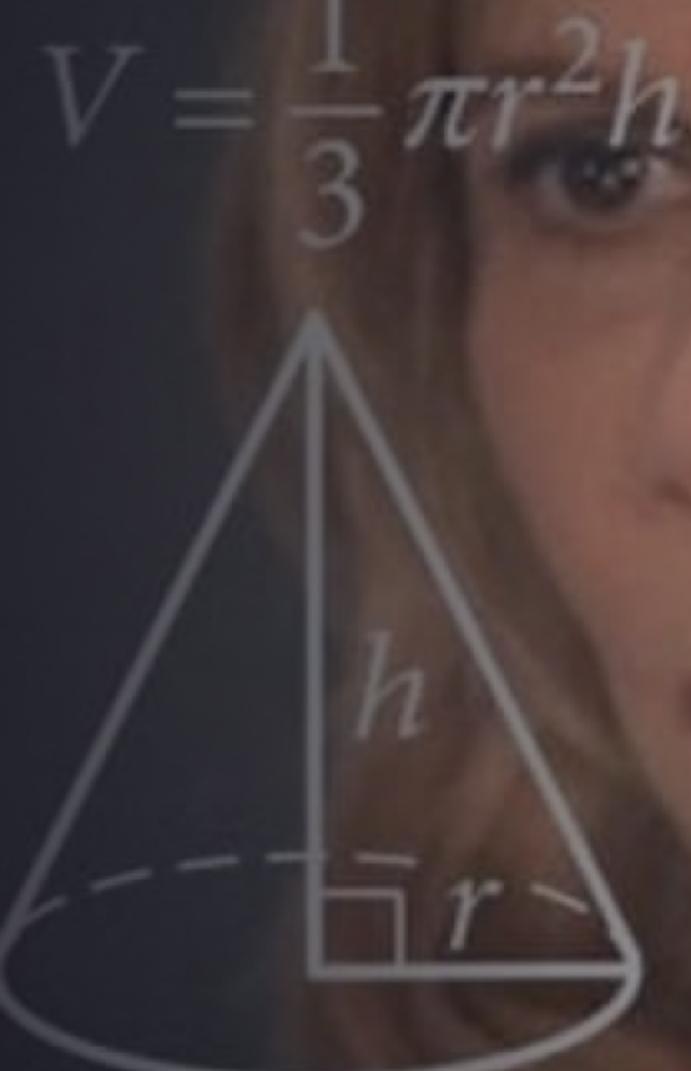
Decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9



Romano

I, V, X, L, C, D e M



$$ax^2 + bx + c = 0$$

$$a(x^2 + \frac{b}{a}x + \frac{c}{a}) = 0$$

$$x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 +$$

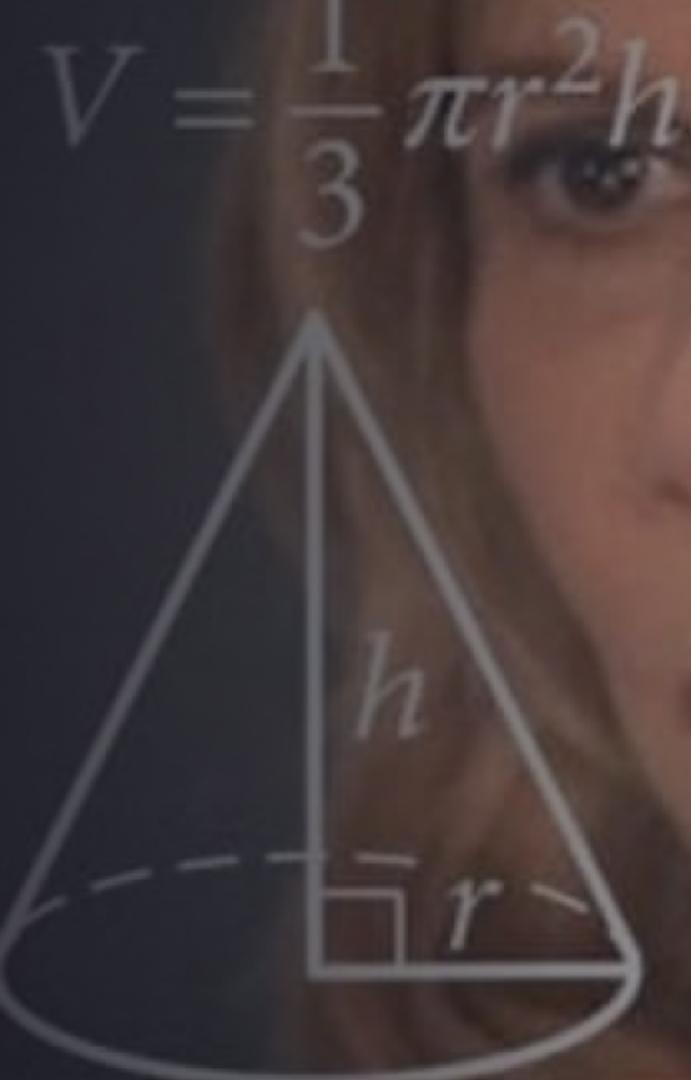
$$(\frac{b}{2a} + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} = 0$$

Sistemas numéricicos



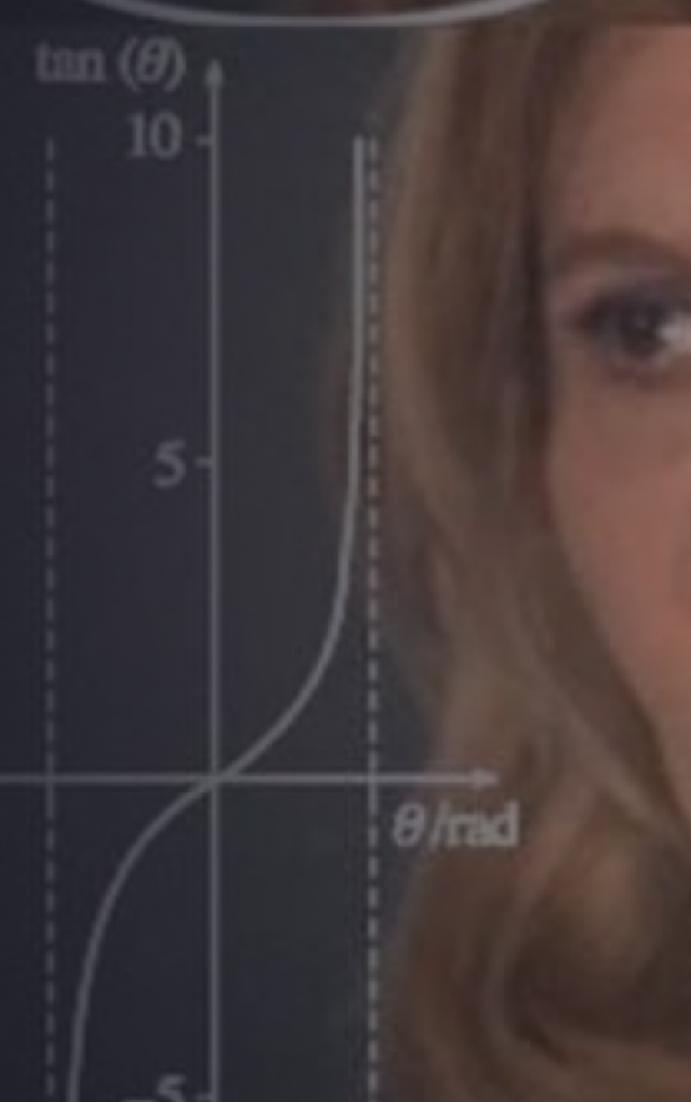
Decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9



Romano

I, V, X, L, C, D e M



Hexadecimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, F



$$V = \pi r^2 h$$

$$ax^2 + bx + c = 0$$

$$a(x^2 + \frac{b}{a}x + \frac{c}{a}) = 0$$

$$x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 +$$

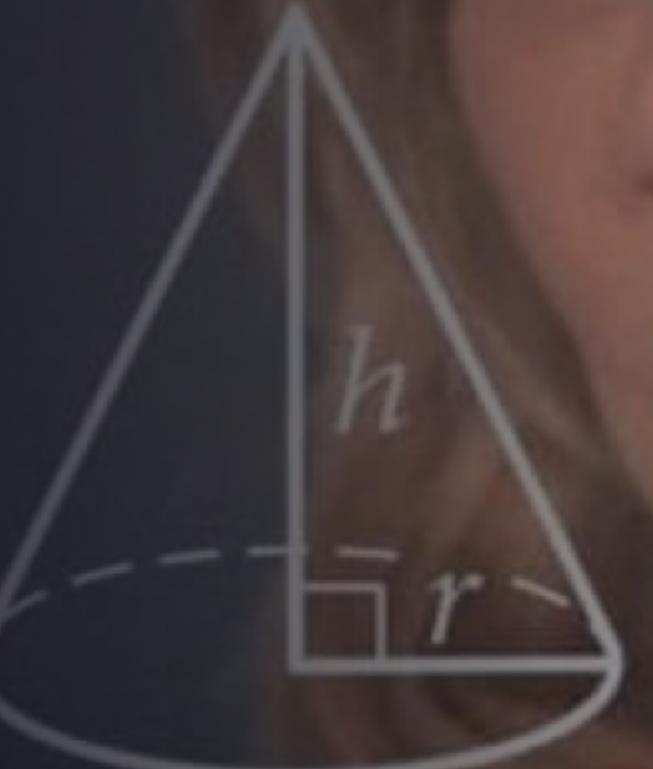
$$(\frac{b}{2a} + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} = 0$$

Sistemas numéricicos



Decimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9



Romano

I, V, X, L, C, D e M



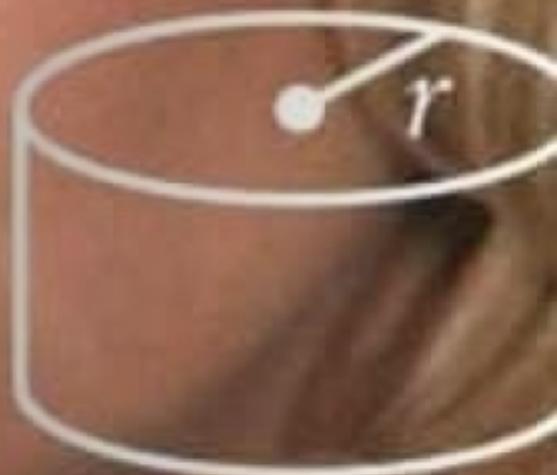
Hexadecimal

0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, F



Binário

0, 1



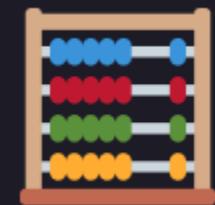
$$V = \pi r^2 h$$

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$$a(x^2 + \frac{b}{a}x + \frac{c}{a}) = 0$$

$$x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 +$$

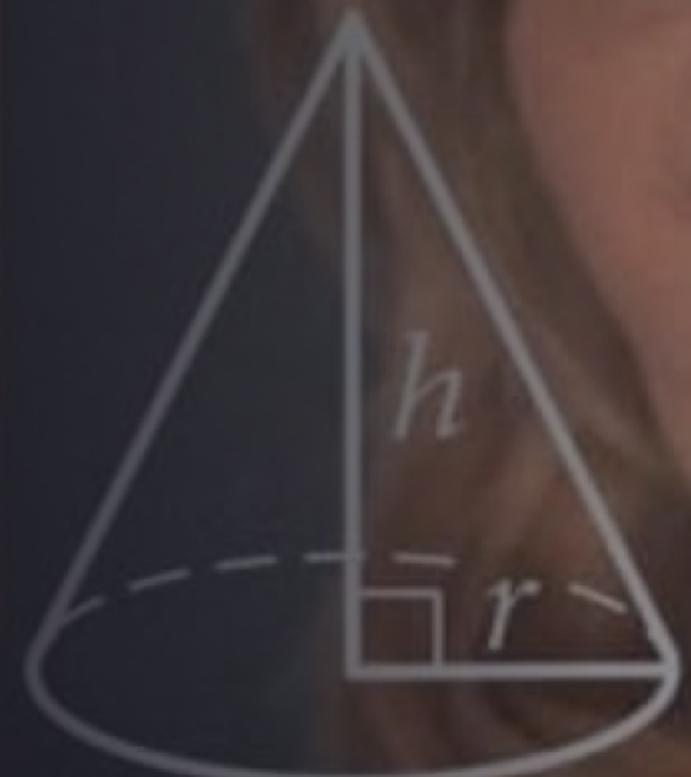
$$(\frac{b}{2a} + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} = 0$$



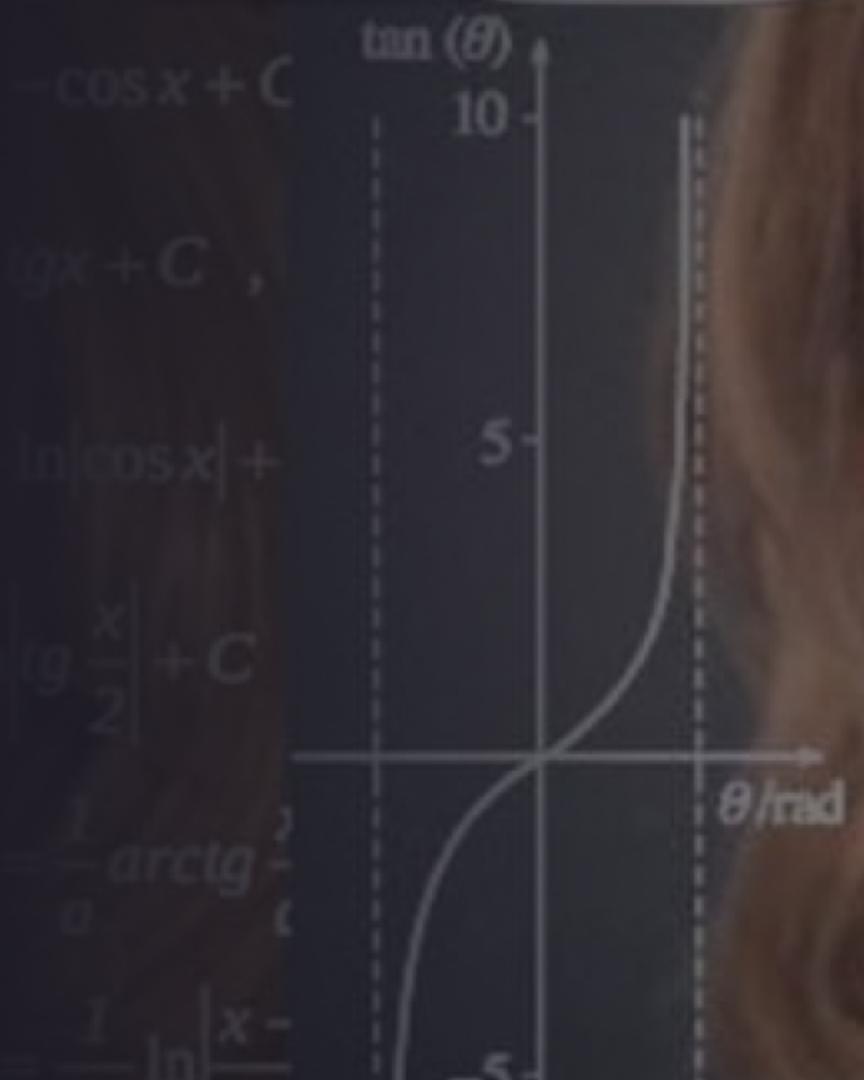
Ábaco



$$V = \frac{1}{3} \pi r^2 h$$



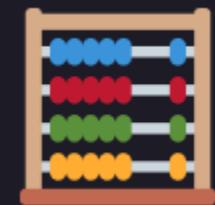
$$V = \pi r^2 h$$



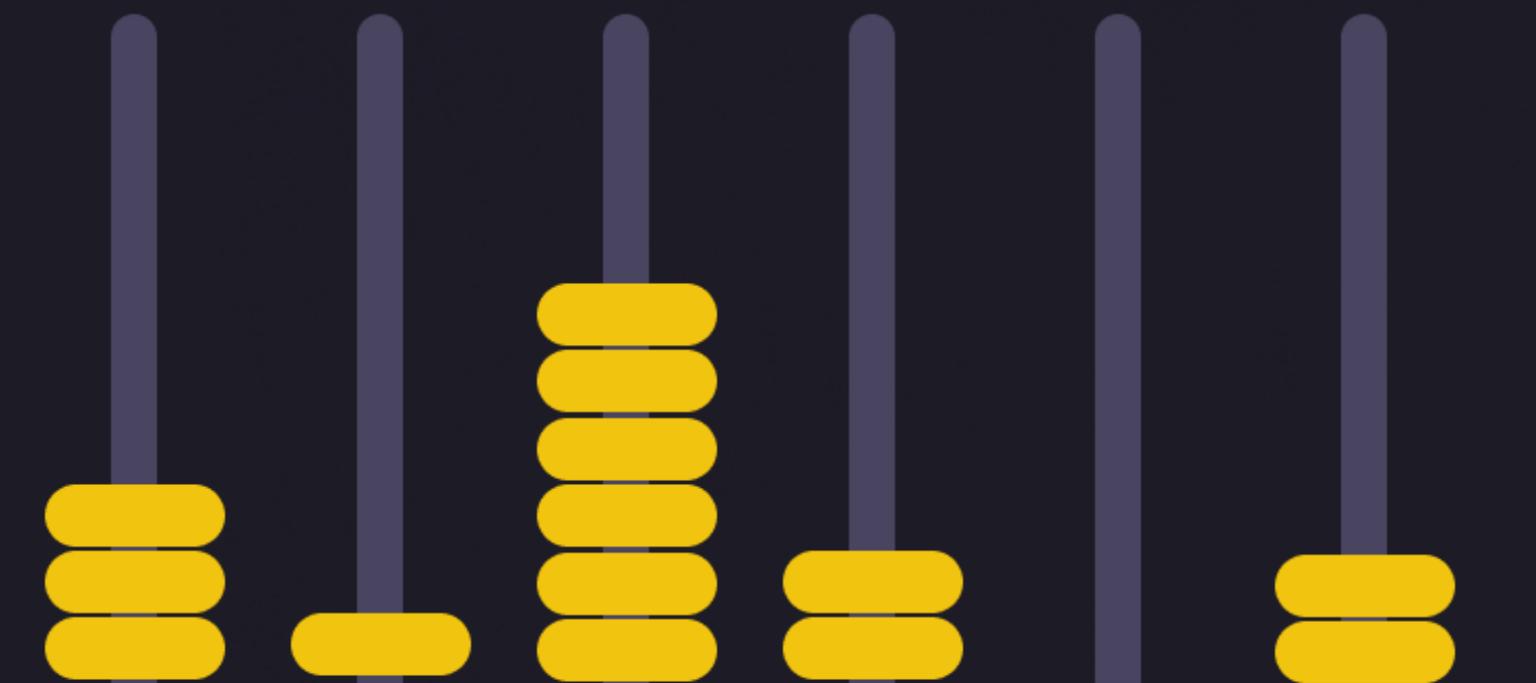
$$ax^2 + bx + c = 0$$
$$a(x^2 + \frac{b}{a}x + \frac{c}{a}) = 0$$

$$x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 +$$

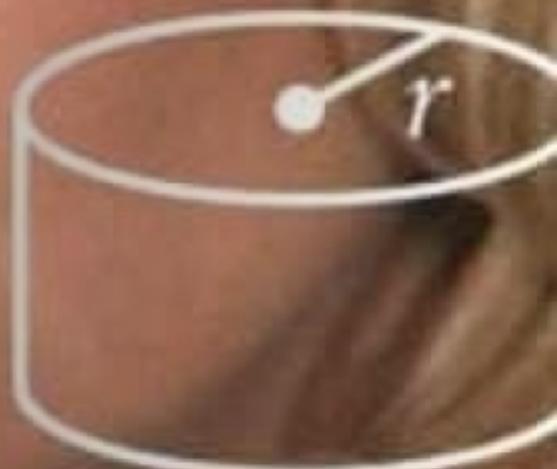
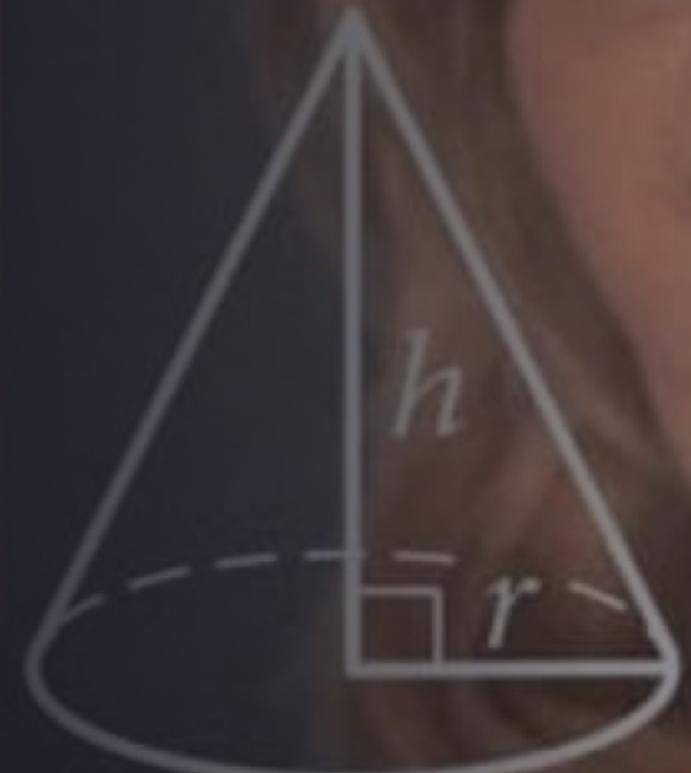
$$(\frac{b}{2a} + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} = 0$$



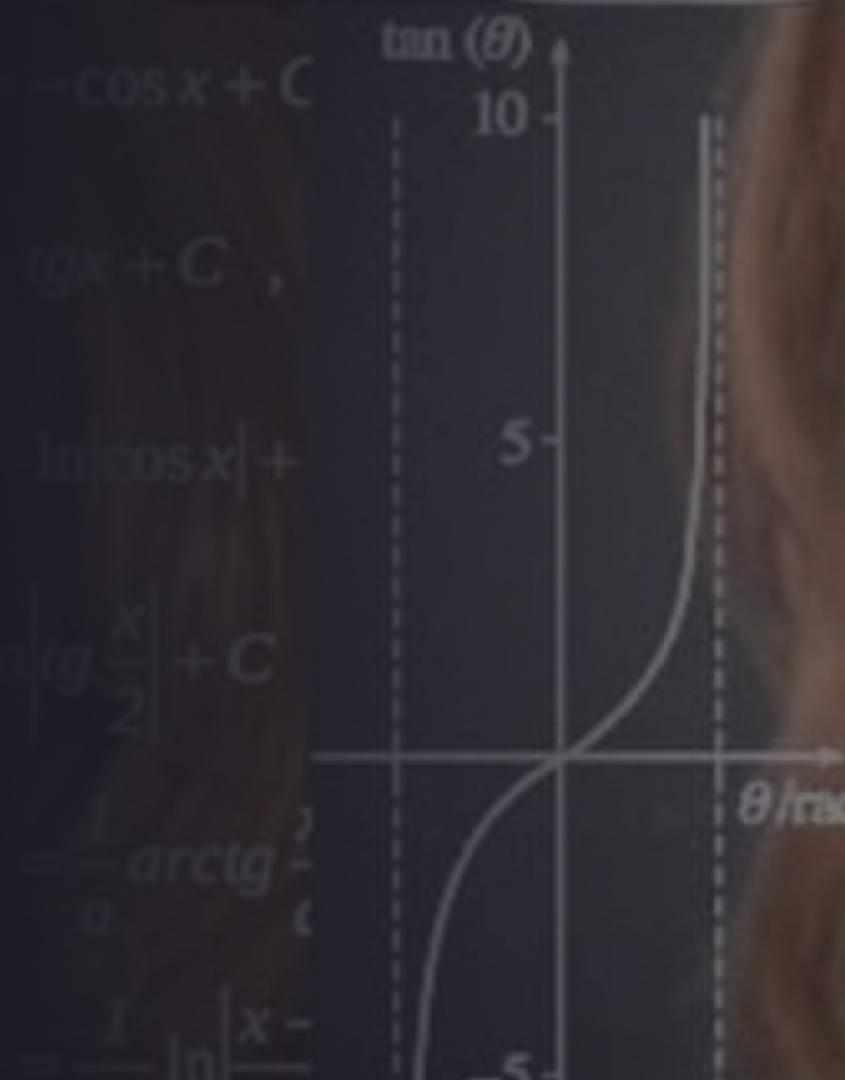
Qual valor?



$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$



$$-\cos x + C$$

$$\ln|\cos x| + C$$

$$\ln|\cos x| +$$

$$\ln\left|\frac{x}{2}\right| + C$$

$$-\arctan\frac{x}{a} + C$$

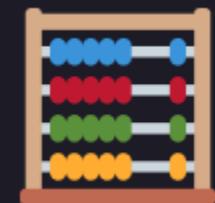
$$-\frac{1}{a} \ln|x| + C$$

$$ax^2 + bx + c = 0$$

$$a(x^2 + \frac{b}{a}x + \frac{c}{a}) = 0$$

$$x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 +$$

$$(x + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} = 0$$

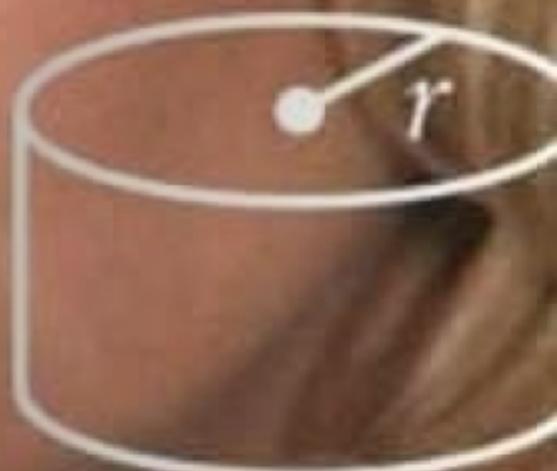
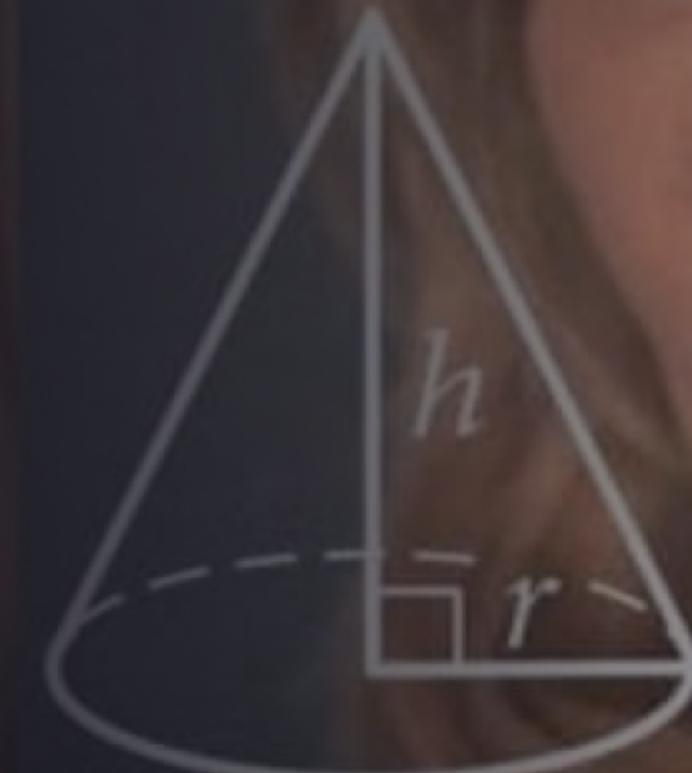


Qual valor?

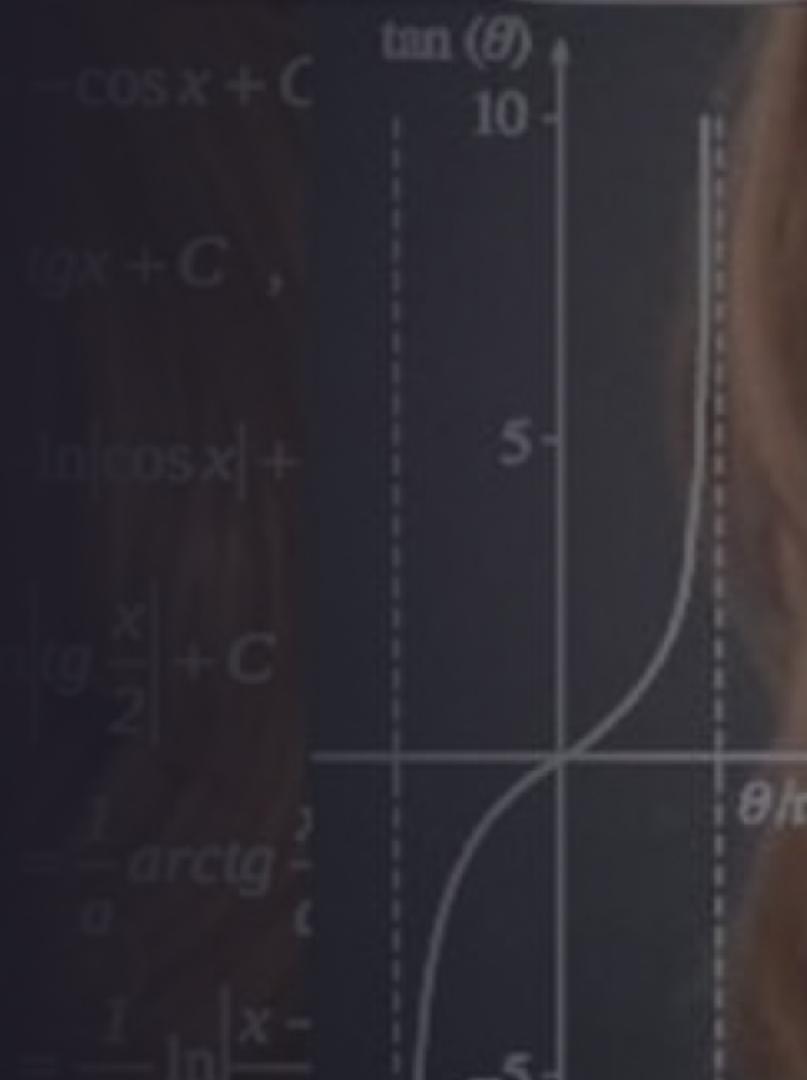


3 1 6 2 0 2

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$



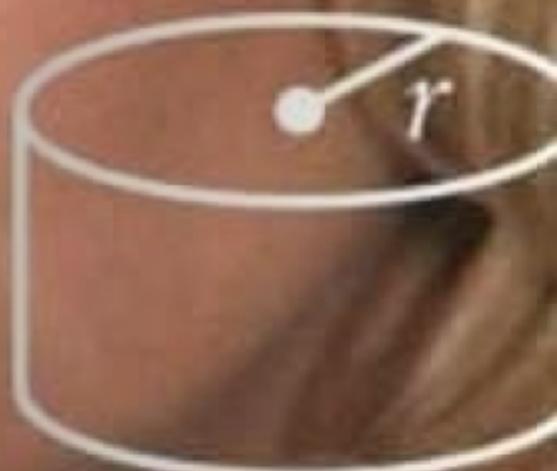
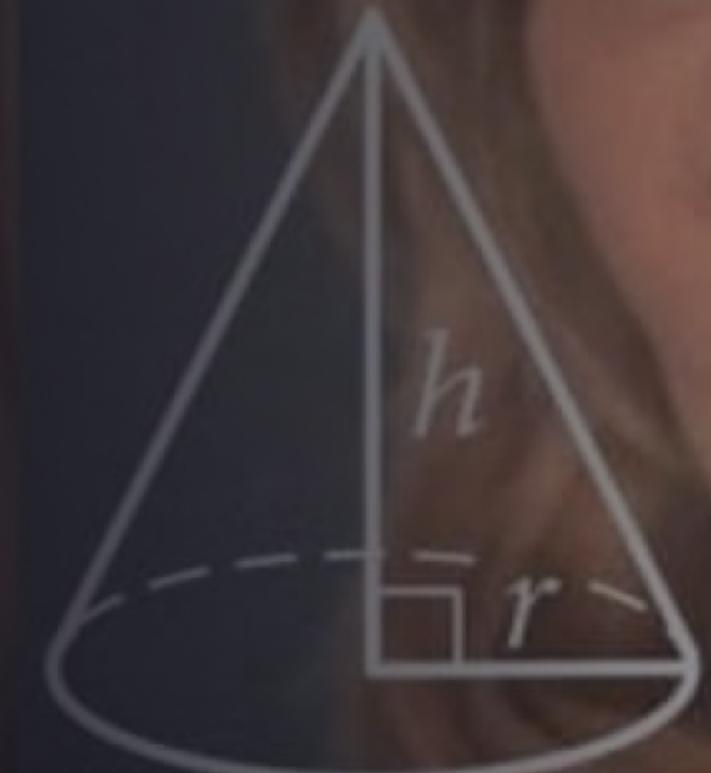
$$\begin{aligned} ax^2 + bx + c &= 0 \\ a(x^2 + \frac{b}{a}x + \frac{c}{a}) &= 0 \\ x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 + \frac{c}{a} &= 0 \\ (x + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} &= 0 \end{aligned}$$

$$= \frac{1}{a} \ln|x -$$

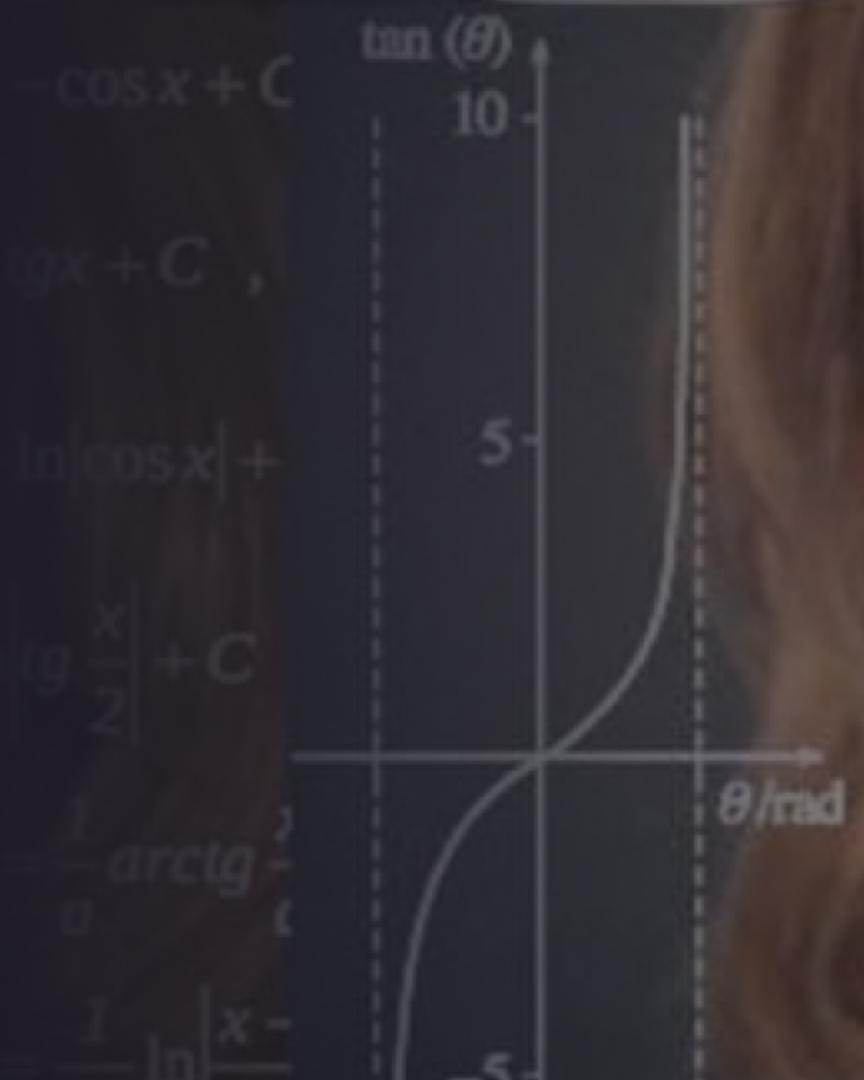
E o binário?



$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$



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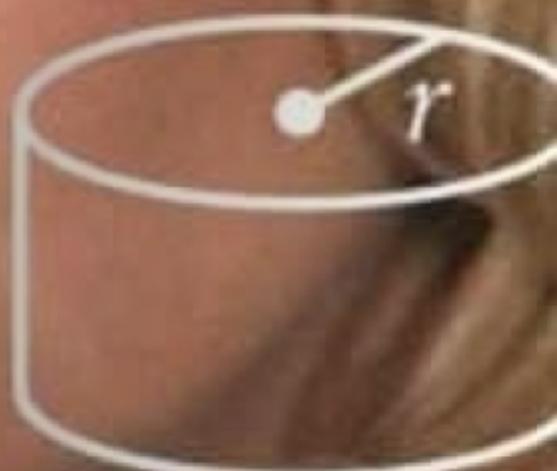
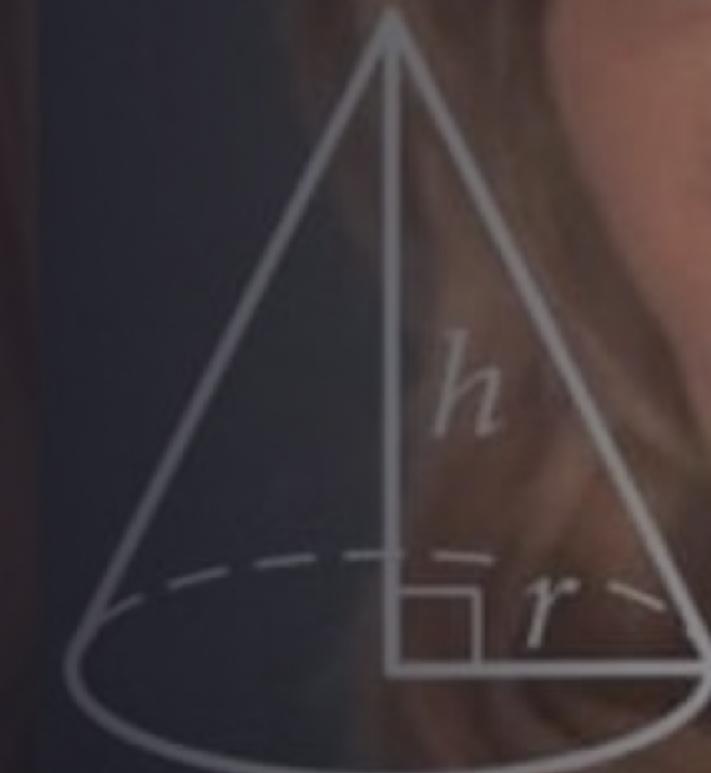
$$(x + \frac{b}{2a})^3 - \frac{b^3 - 4ac}{8a^2} = 0$$

E o binário?

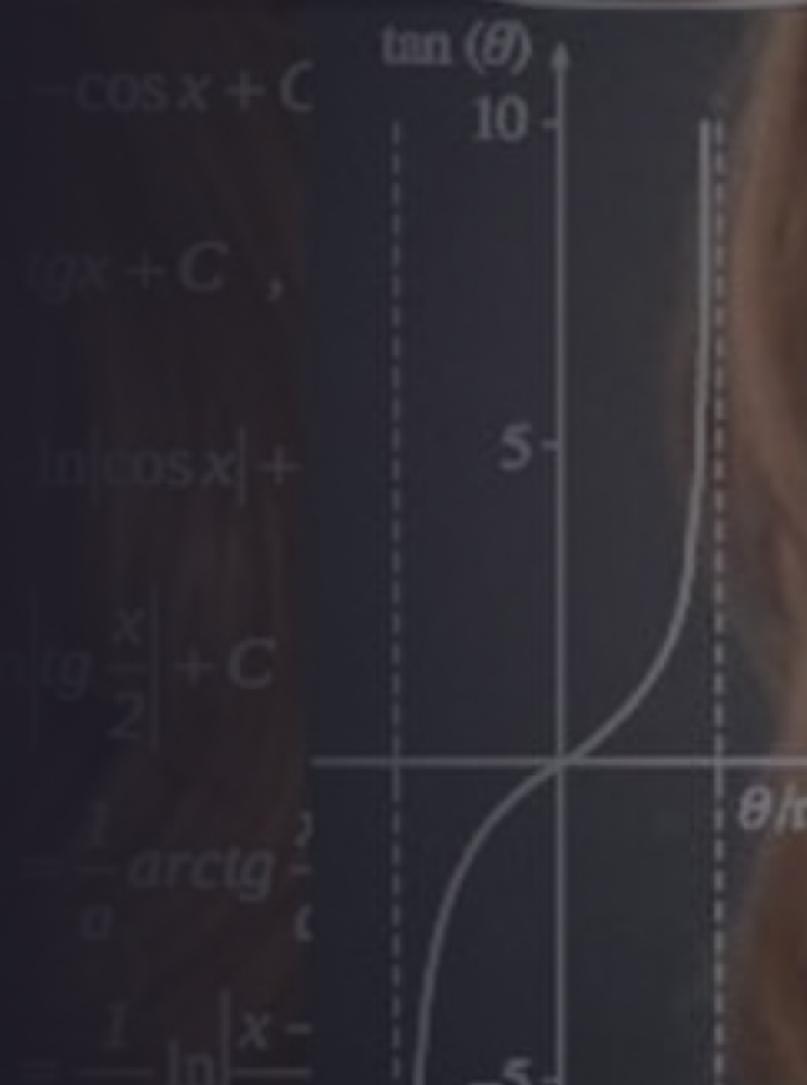


0 0 1 1 0 1

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$



$$-\cos x + C$$

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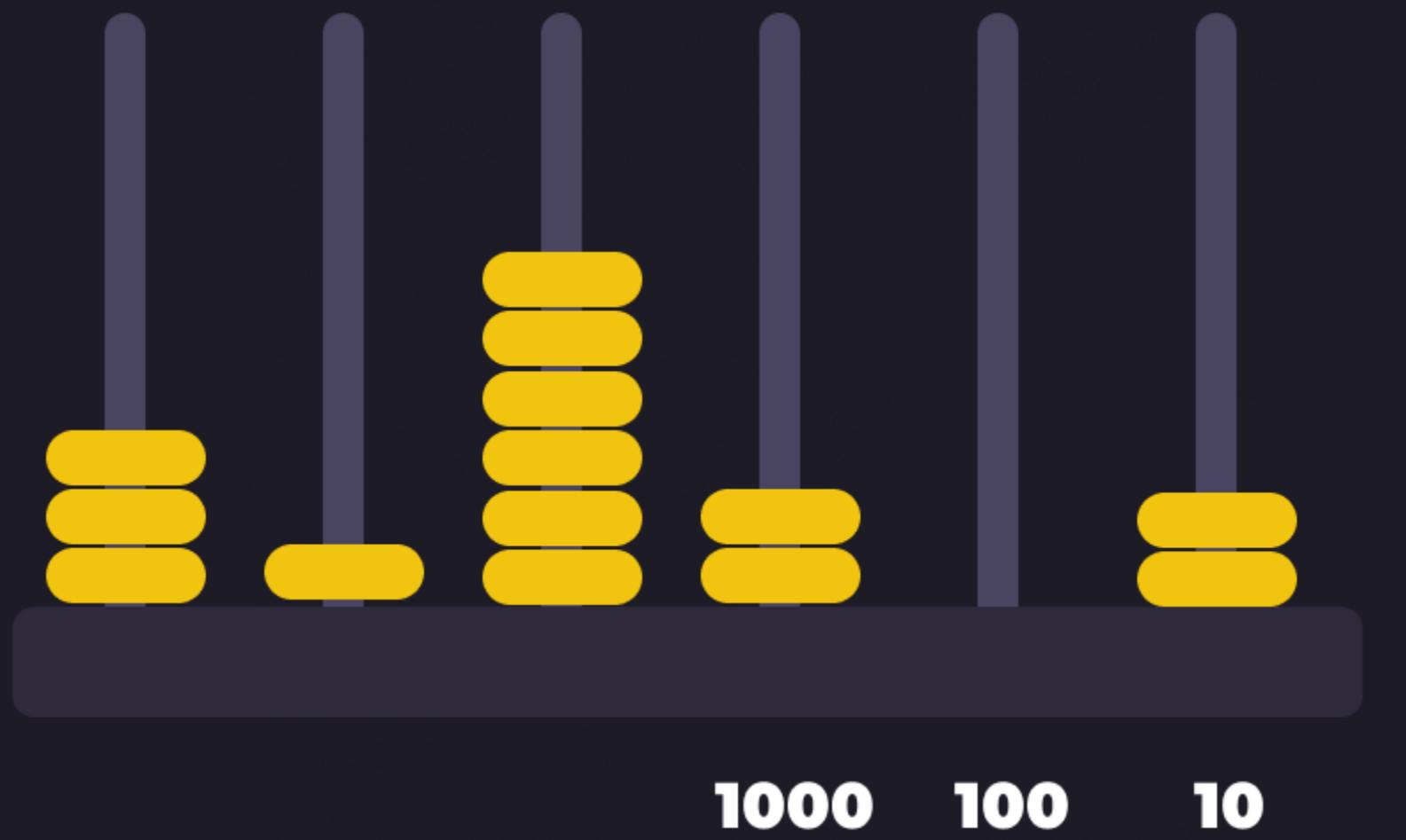
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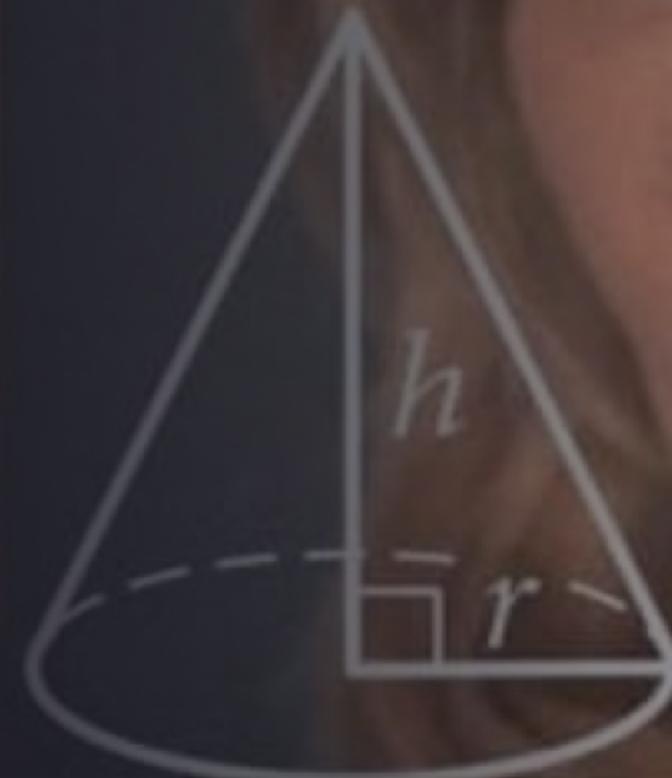
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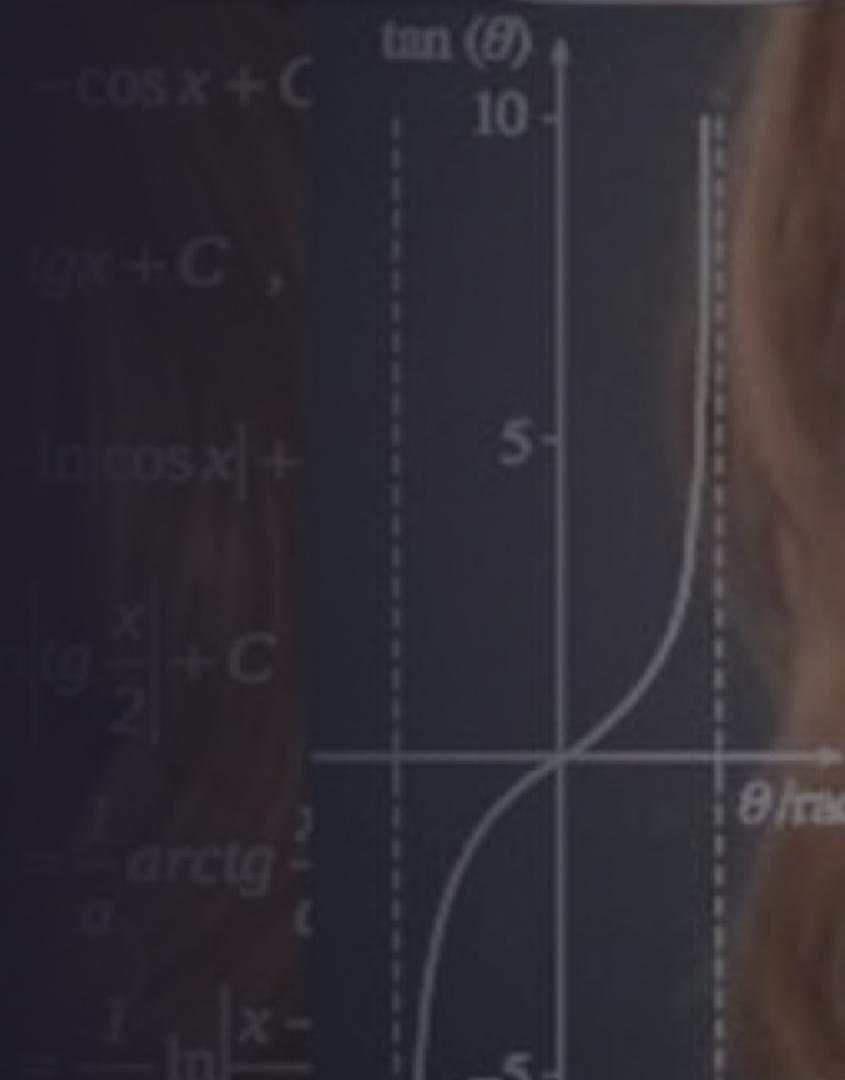
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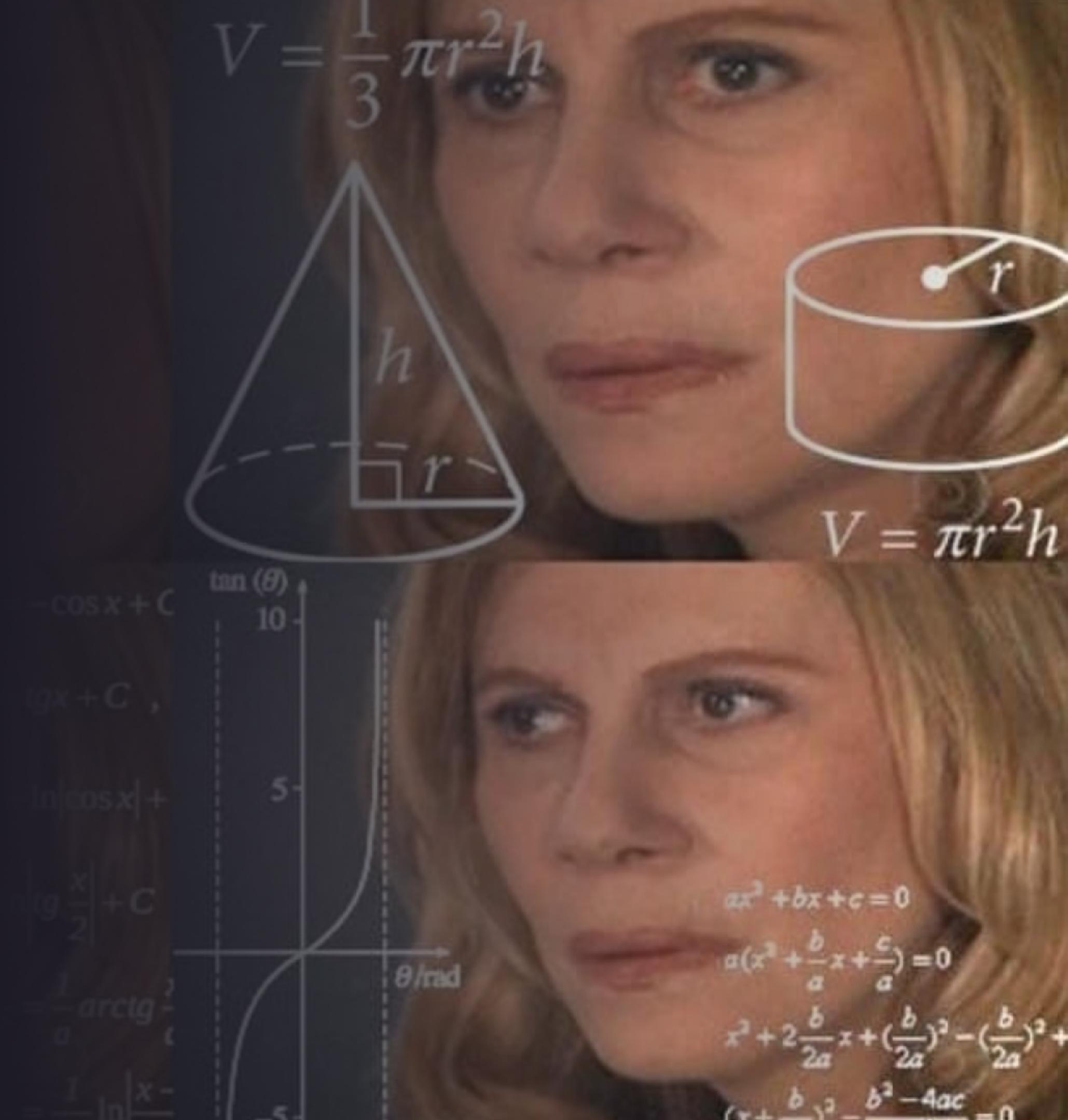
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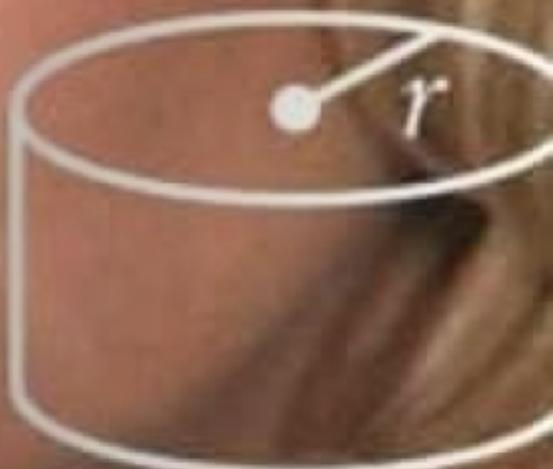
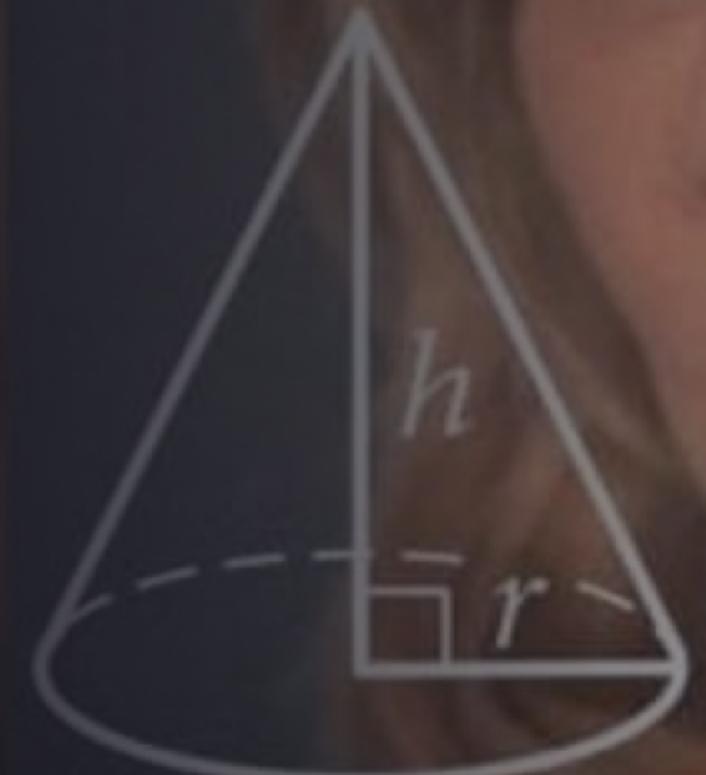


E o binário?

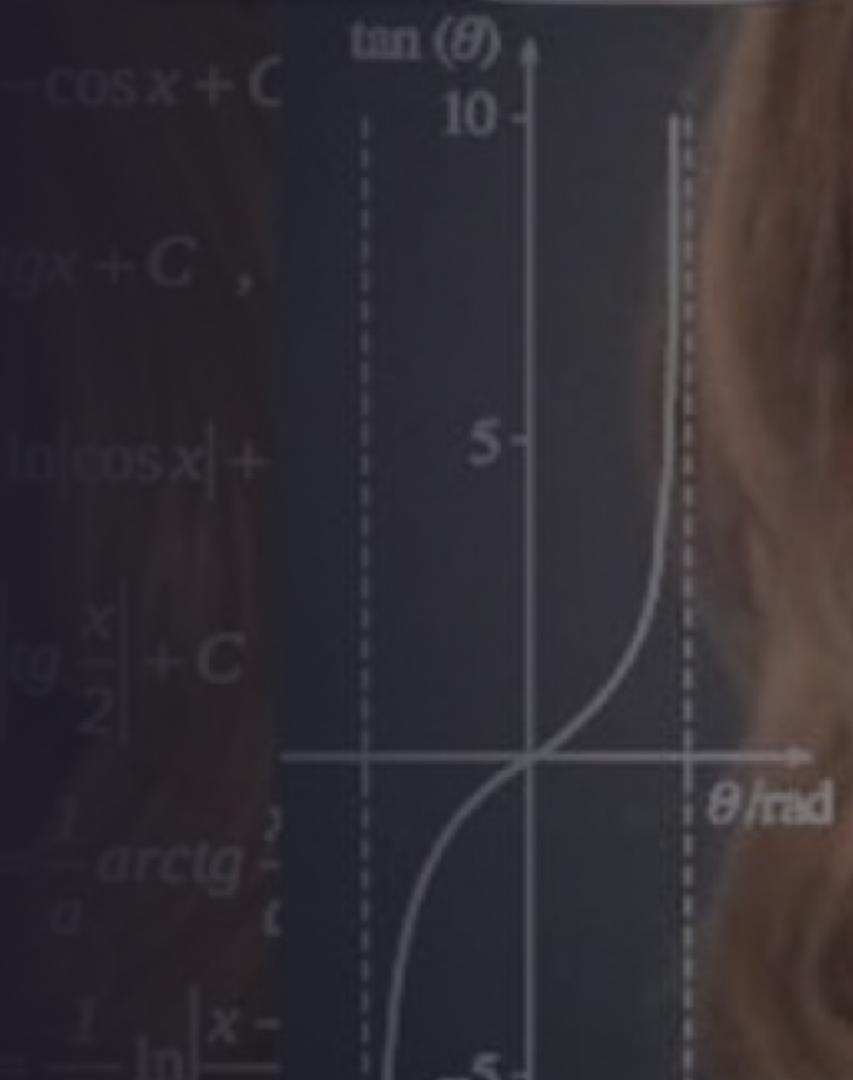


2 1

$$V = \frac{1}{3} \pi r^2 h$$



$$V = \pi r^2 h$$



$$-\cos x + C$$

$$\ln|\cos x| + C$$

$$\left| g \frac{x}{2} \right| + C$$

$$-\frac{1}{a} \arctg \frac{x}{a} + C$$

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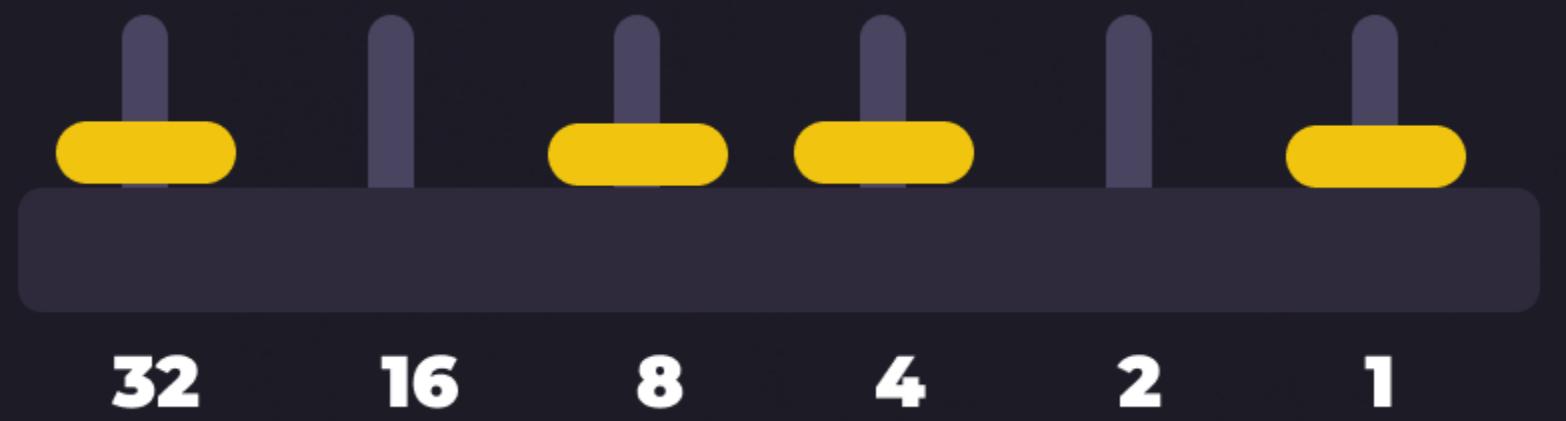
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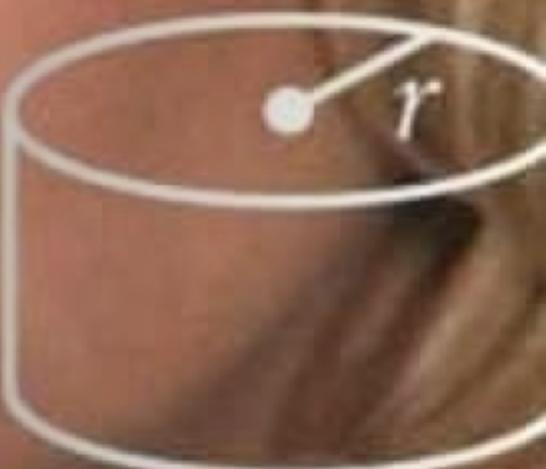
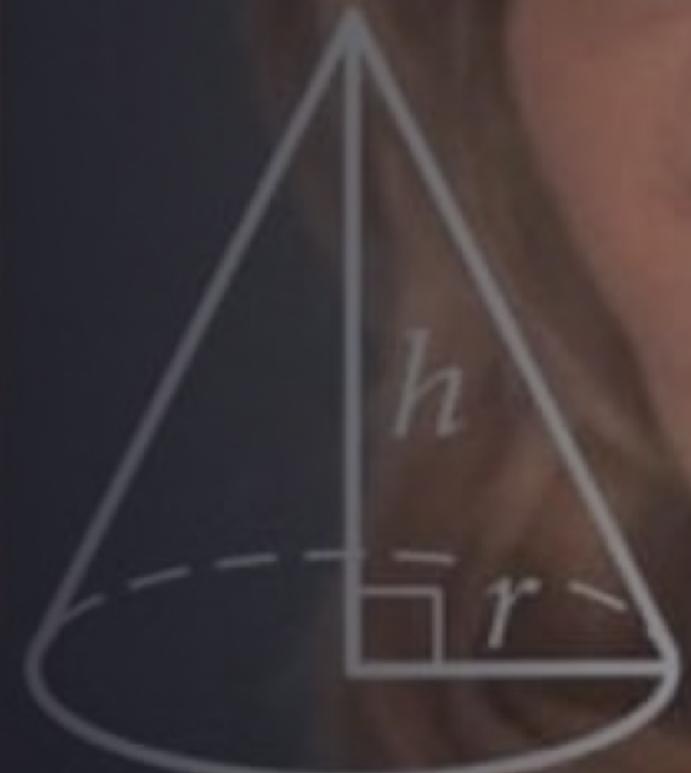
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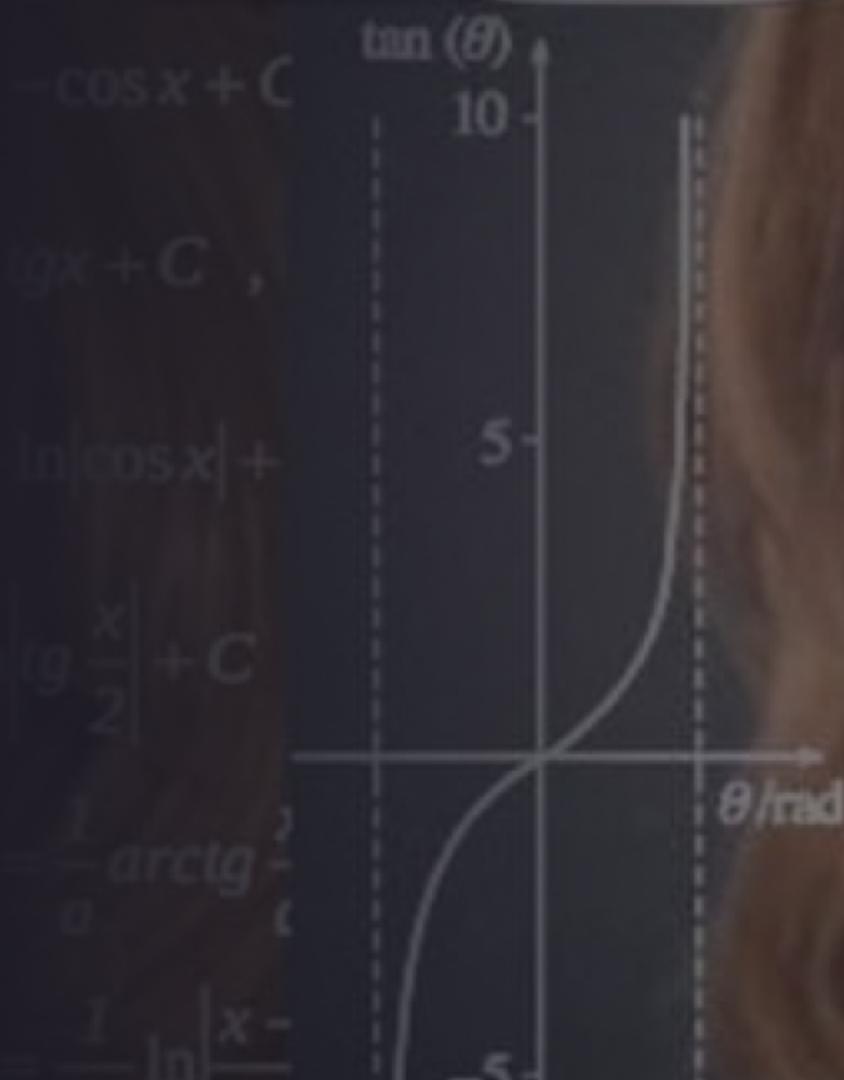
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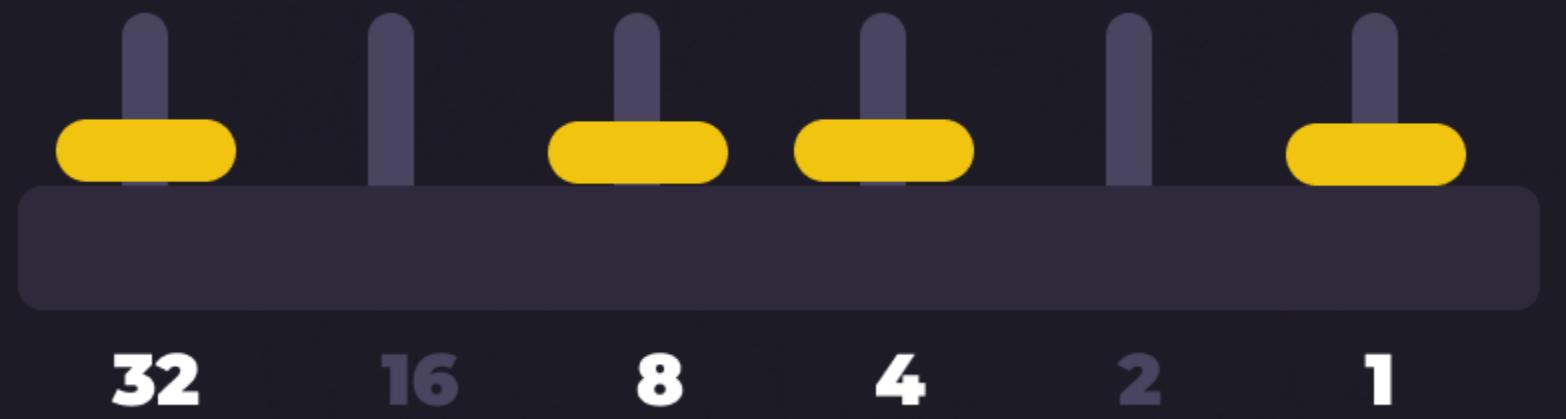
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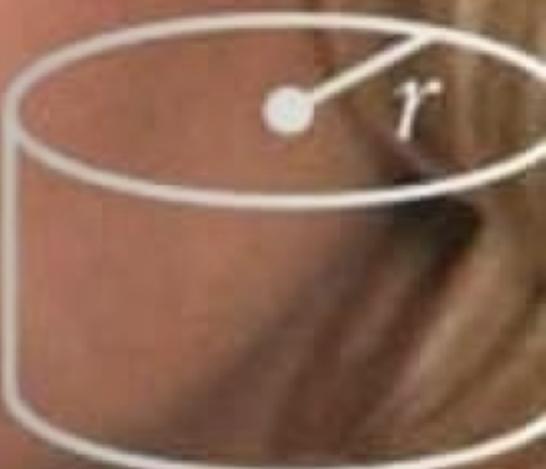
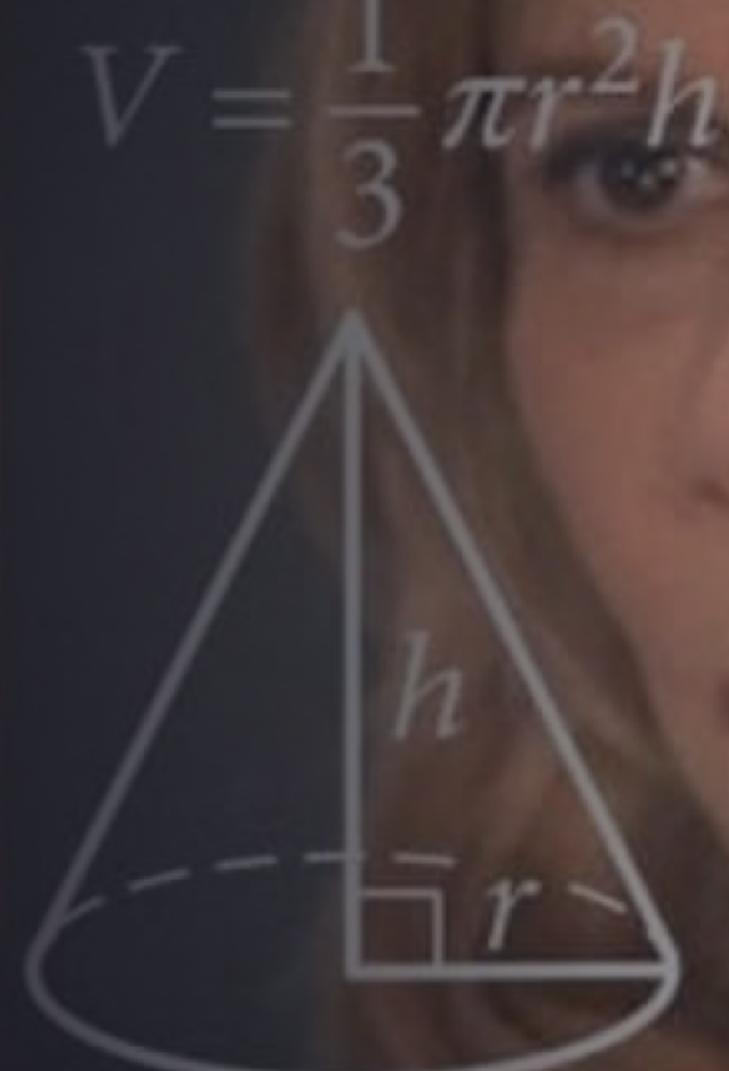
$$x^3 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 +$$

$$(x + \frac{b}{2a})^3 - \frac{b^3 - 4ac}{8a^2} = 0$$

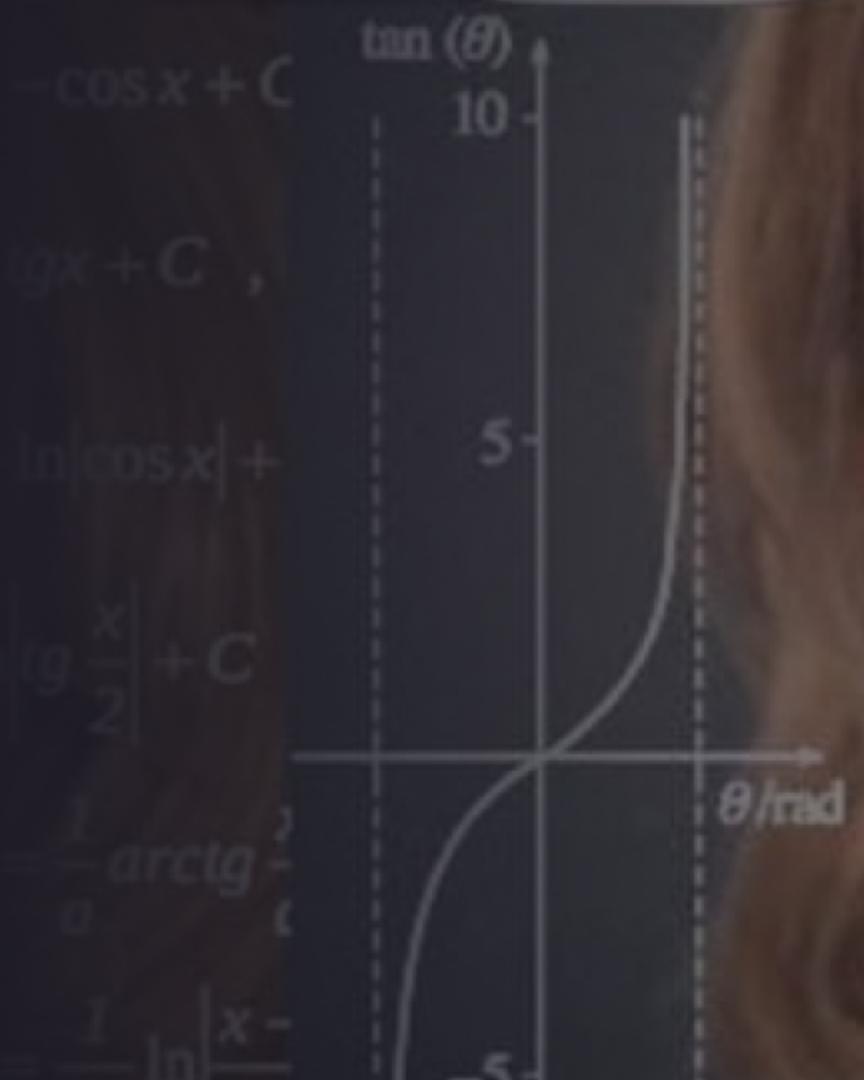
E o binário?



45



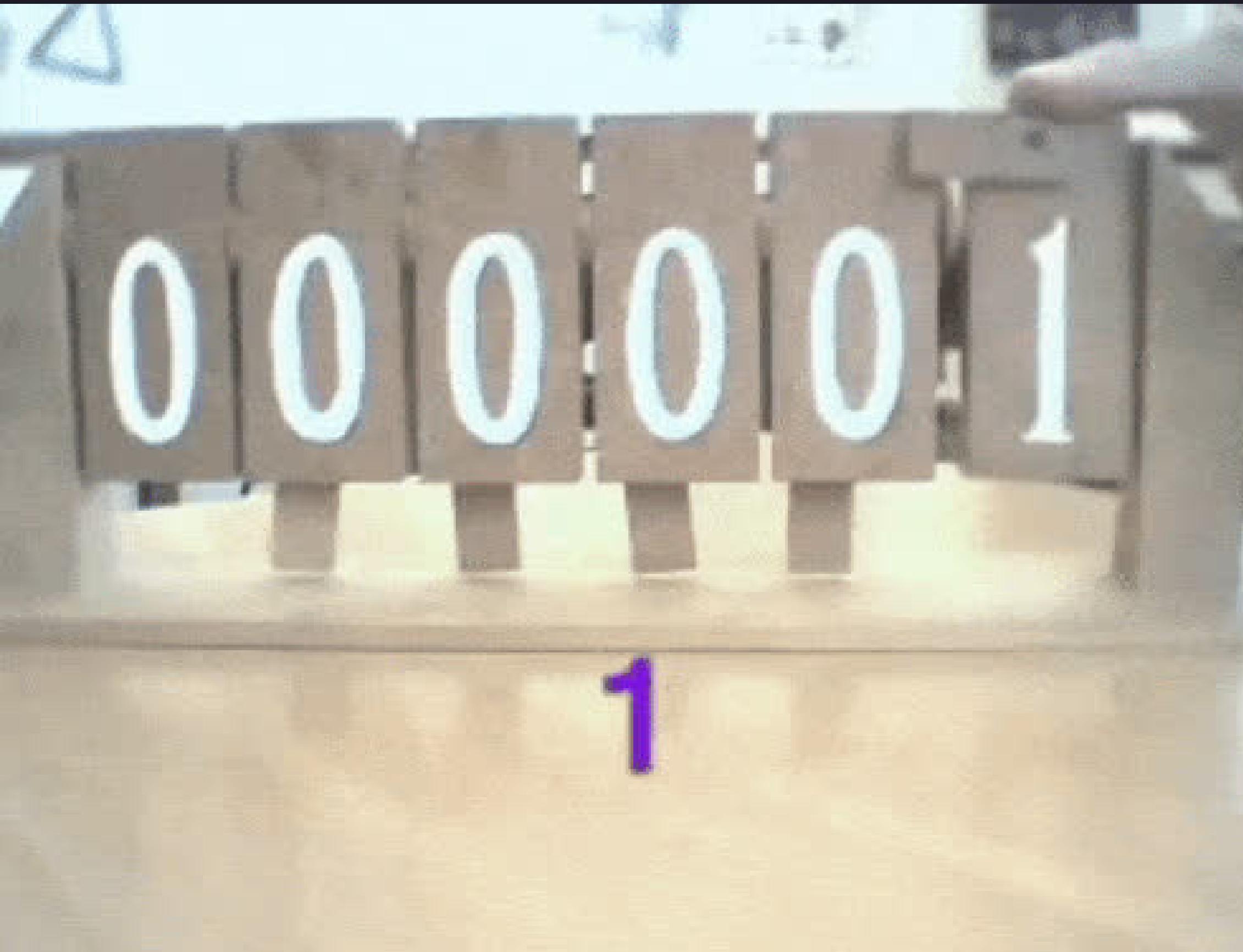
$$V = \pi r^2 h$$



$$\begin{aligned} ax^2 + bx + c &= 0 \\ a(x^2 + \frac{b}{a}x + \frac{c}{a}) &= 0 \\ x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 + \end{aligned}$$

$$(x + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a} = 0$$

$$= \frac{1}{4a} \ln |x -$$



A tabela ASCII



Dec	Hx	Oct	Char		Dec	Hx	Oct	Html	Chr		Dec	Hx	Oct	Html	Chr		Dec	Hx	Oct	Html	Chr
0	0	000	NUL	(null)	32	20	040	 	Space		64	40	100	@	Ø		96	60	140	`	`
1	1	001	SOH	(start of heading)	33	21	041	!	!		65	41	101	A	A		97	61	141	a	a
2	2	002	STX	(start of text)	34	22	042	"	"		66	42	102	B	B		98	62	142	b	b
3	3	003	ETX	(end of text)	35	23	043	#	#		67	43	103	C	C		99	63	143	c	c
4	4	004	EOT	(end of transmission)	36	24	044	$	\$		68	44	104	D	D		100	64	144	d	d
5	5	005	ENQ	(enquiry)	37	25	045	%	%		69	45	105	E	E		101	65	145	e	e
6	6	006	ACK	(acknowledge)	38	26	046	&	&		70	46	106	F	F		102	66	146	f	f
7	7	007	BEL	(bell)	39	27	047	'	'		71	47	107	G	G		103	67	147	g	g
8	8	010	BS	(backspace)	40	28	050	((72	48	110	H	H		104	68	150	h	h
9	9	011	TAB	(horizontal tab)	41	29	051))		73	49	111	I	I		105	69	151	i	i
10	A	012	LF	(NL line feed, new line)	42	2A	052	*	*		74	4A	112	J	J		106	6A	152	j	j
11	B	013	VT	(vertical tab)	43	2B	053	+	+		75	4B	113	K	K		107	6B	153	k	k
12	C	014	FF	(NP form feed, new page)	44	2C	054	,	,		76	4C	114	L	L		108	6C	154	l	l
13	D	015	CR	(carriage return)	45	2D	055	-	-		77	4D	115	M	M		109	6D	155	m	m
14	E	016	SO	(shift out)	46	2E	056	.	.		78	4E	116	N	N		110	6E	156	n	n
15	F	017	SI	(shift in)	47	2F	057	/	/		79	4F	117	O	O		111	6F	157	o	o
16	10	020	DLE	(data link escape)	48	30	060	0	Ø		80	50	120	P	P		112	70	160	p	p
17	11	021	DC1	(device control 1)	49	31	061	1	1		81	51	121	Q	Q		113	71	161	q	q
18	12	022	DC2	(device control 2)	50	32	062	2	2		82	52	122	R	R		114	72	162	r	r
19	13	023	DC3	(device control 3)	51	33	063	3	3		83	53	123	S	S		115	73	163	s	s
20	14	024	DC4	(device control 4)	52	34	064	4	4		84	54	124	T	T		116	74	164	t	t
21	15	025	NAK	(negative acknowledge)	53	35	065	5	5		85	55	125	U	U		117	75	165	u	u
22	16	026	SYN	(synchronous idle)	54	36	066	6	6		86	56	126	V	V		118	76	166	v	v
23	17	027	ETB	(end of trans. block)	55	37	067	7	7		87	57	127	W	W		119	77	167	w	w
24	18	030	CAN	(cancel)	56	38	070	8	8		88	58	130	X	X		120	78	170	x	x
25	19	031	EM	(end of medium)	57	39	071	9	9		89	59	131	Y	Y		121	79	171	y	y
26	1A	032	SUB	(substitute)	58	3A	072	:	:		90	5A	132	Z	Z		122	7A	172	z	z
27	1B	033	ESC	(escape)	59	3B	073	;	:		91	5B	133	[[123	7B	173	{	{
28	1C	034	FS	(file separator)	60	3C	074	<	<		92	5C	134	\	\		124	7C	174	|	
29	1D	035	GS	(group separator)	61	3D	075	=	=		93	5D	135]]		125	7D	175	}	}
30	1E	036	RS	(record separator)	62	3E	076	>	>		94	5E	136	^	^		126	7E	176	~	~
31	1F	037	US	(unit separator)	63	3F	077	?	?		95	5F	137	_	_		127	7F	177		DEL

	Charset	Description	Default collation	Maxlen
	big5	Big5 Traditional Chinese	big5_chinese_ci	2
	dec8	DEC West European	dec8_swedish_ci	1
	cp850	DOS West European	cp850_general_ci	1
	hp8	HP West European	hp8_english_ci	1
	koi8r	KOI8-R Relcom Russian	koi8r_general_ci	1
	latin1	cp1252 West European	latin1_swedish_ci	1
	latin2	ISO 8859-2 Central European	latin2_general_ci	1
	swe7	7bit Swedish	swe7_swedish_ci	1
	ascii	US ASCII	ascii_general_ci	1
	ujis	EUC-JP Japanese	ujis_japanese_ci	3
	sjis	Shift-JIS Japanese	sjis_japanese_ci	2
	hebrew	ISO 8859-8 Hebrew	hebrew_general_ci	1
	tis620	TIS620 Thai	tis620_thai_ci	1

Entre bits e bytes

Bit

1 dígito (0 ou 1)



Entre bits e bytes

Bit

1 dígito (0 ou 1)

Byte

Agrupamento de 8 bits



Entre bits e bytes

$$2^10 = 1024$$

KiloByte - KB

1024 KB: 1 MegaByte (MB) 2^{10}

1024 MB: 1 GigaByte (GB) 2^{30}

1024 GB: 1 TeraByte (TB) 2^{40}

Peta, Exa, Zetta, Yotta...





**E por que
usar base 2?**





Eletricidade



Exercícios

1. Escreva seu nome em código binário.
2. Quantos bytes tem em seu nome completo?

⚠ Importante!

Publique na comunidade, no
canal `# exercicios` e use
hashtag **#exercícioBinário**

