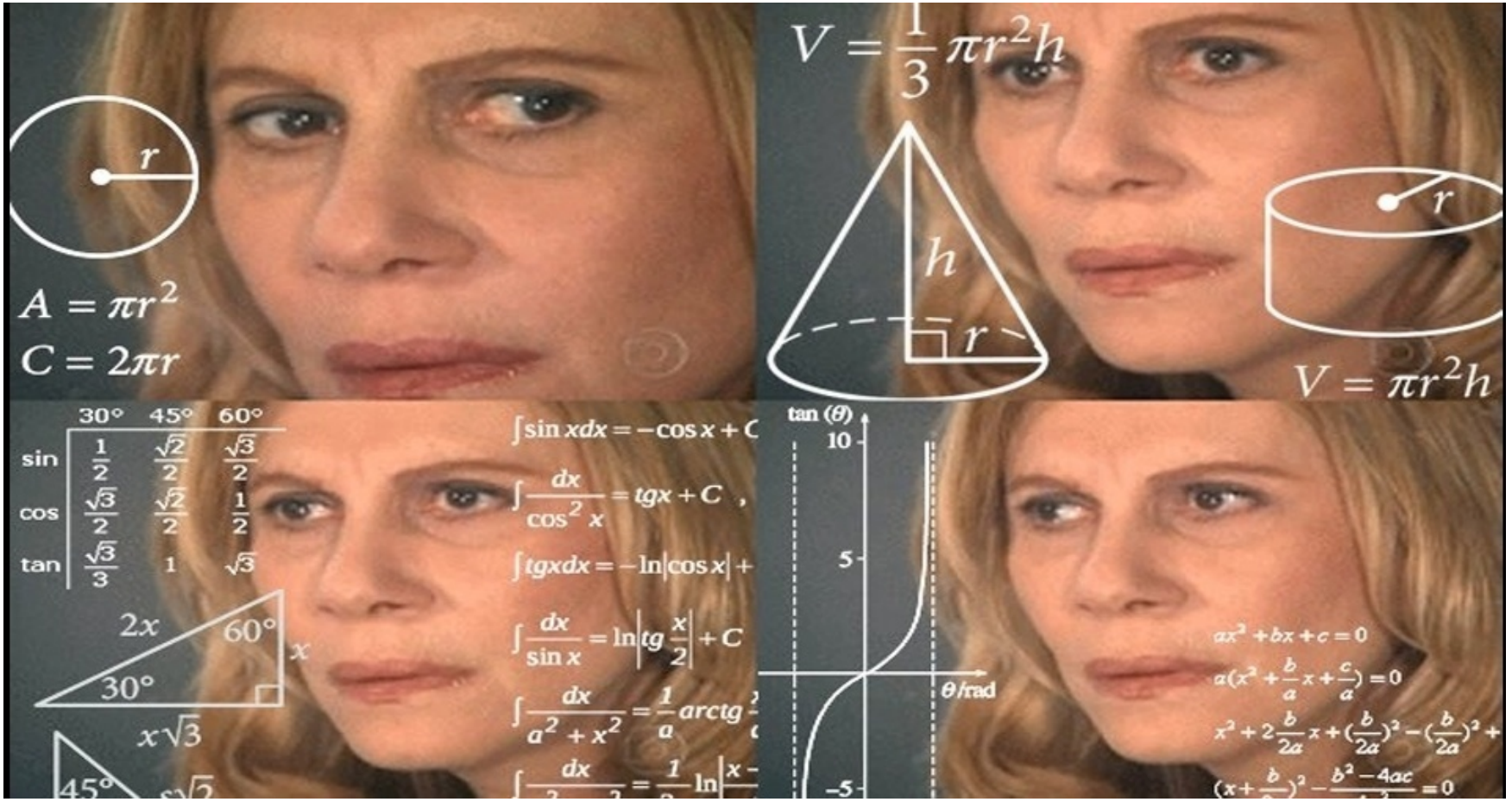
EXERCÍCIOS


r
$A = \pi r^2$
$C = 2\pi r$
$V = \frac{1}{3}\pi r^2 h$
h
r
r
$V = \pi r^2 h$
30° 45° 60°
sin $\frac{1}{2}$ $\frac{\sqrt{2}}{2}$ $\frac{\sqrt{3}}{2}$
cos $\frac{\sqrt{3}}{2}$ $\frac{\sqrt{2}}{2}$ $\frac{1}{2}$
tan $\frac{\sqrt{3}}{3}$ 1 $\sqrt{3}$
2x
60°
30°
x
$x\sqrt{3}$
45°
$\int \sin x dx = -\cos x + C$
$\int \frac{dx}{\cos^2 x} = tgx + C$,
$\int tgx dx = -\ln|\cos x| +$
$\int \frac{dx}{\sin x} = \ln\left|tg\frac{x}{2}\right| + C$
$\int \frac{dx}{a^2 + x^2} = \frac{1}{a} arctg$
tan (θ)
10
5
-5
θ/rad
$ax^2 + bx + c = 0$
$a(x^2 + \frac{b}{a}x + \frac{c}{a}) = 0$
$x^2 + 2\frac{b}{2a}x + (\frac{b}{2a})^2 - (\frac{b}{2a})^2 +$
$(x + \frac{b}{2a})^2 - \frac{b^2 - 4ac}{4a^2} = 0$

`print()` outputs to the screen. Whatever you put between the parentheses will be output! E.g. `print(5)` will output `5`!

What is the output of this code?

```
print(42)
```

SELECT THE OUTPUT

- 42
- 2
- 4

Variables can be used in calculations. The value of the variable will be used for the computation of the result.

Select the code to return the output

```
80
```

SELECT THE CODE

```
income = 100
costs = 20
print(costs - income)
```

```
income = 100
costs = 20
print(income - costs)
```

```
income = 100
costs = 20
print(profit)
```

You can use the `type()` function to get the data type of a variable, e.g. `type(10)` gives you `<type 'int'>`.

What is the output of this code?

```
x = 5
print(type(x))
```

SELECT THE OUTPUT

```
<type 'int'>
```

```
<type 'float'>
```

What is the output of this code?

```
a = '1'
b = '2'
print(a + b)
```

SELECT THE OUTPUT

- 12
- 3
- '3'
- '12'

You can also access values using negative indexes, which will go from right-to-left. So, the last element would be at index `-1`.

Complete the code to return the output

```
l = [1, 2, 3]
print(l[ ? ])
```

```
2
```

FILL IN THE BLANKS

-1	-2	-3

You access values from lists of lists using indexes with `[][]`; e.g. to get the **second** element of the **first** sublist: `l[0][1]`.

Complete the code to return the output

```
l = [[7, 6], [8, 9], [10, 11]]
print(l[ ? ][ ? ])
```

```
8
```

FILL IN THE BLANKS

1	2	0	-1

You can replace elements in a list by using index notation with assignment; e.g. `l[0] = 10` will set the first element of `l` to `10`.

What is the output of this code?

```
l = [5, 6, 4, 2]
l[2] = 100
print(l)
```

SELECT THE OUTPUT

```
[5, 100, 4, 2]
```

```
[5, 6, 4, 100]
```

```
[5, 6, 100, 2]
```

With integer variables `a` and `b`, `b = a` **copies** the value of `a` into `b`. So, if `a` changes `b` will not change.

What is the output of this code?

```
a = 1
b = a
a = 6
print(a)
print(b)
```

SELECT THE OUTPUT

```
1
6
```

```
6
1
```

```
6
6
```

With lists `a` and `b`, `b = a` does not copy the values of `a` into `b`, but instead they share those values. So, if `a` changes, `b` changes too!

What is the output of this code?

```
a = [1, 9]
b = a
a[0] = 9
print(a)
print(b)
```

SELECT THE OUTPUT

```
[9, 9]
[1, 9]
```

```
[1, 9]
[1, 9]
```

```
[9, 9]
[9, 9]
```

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