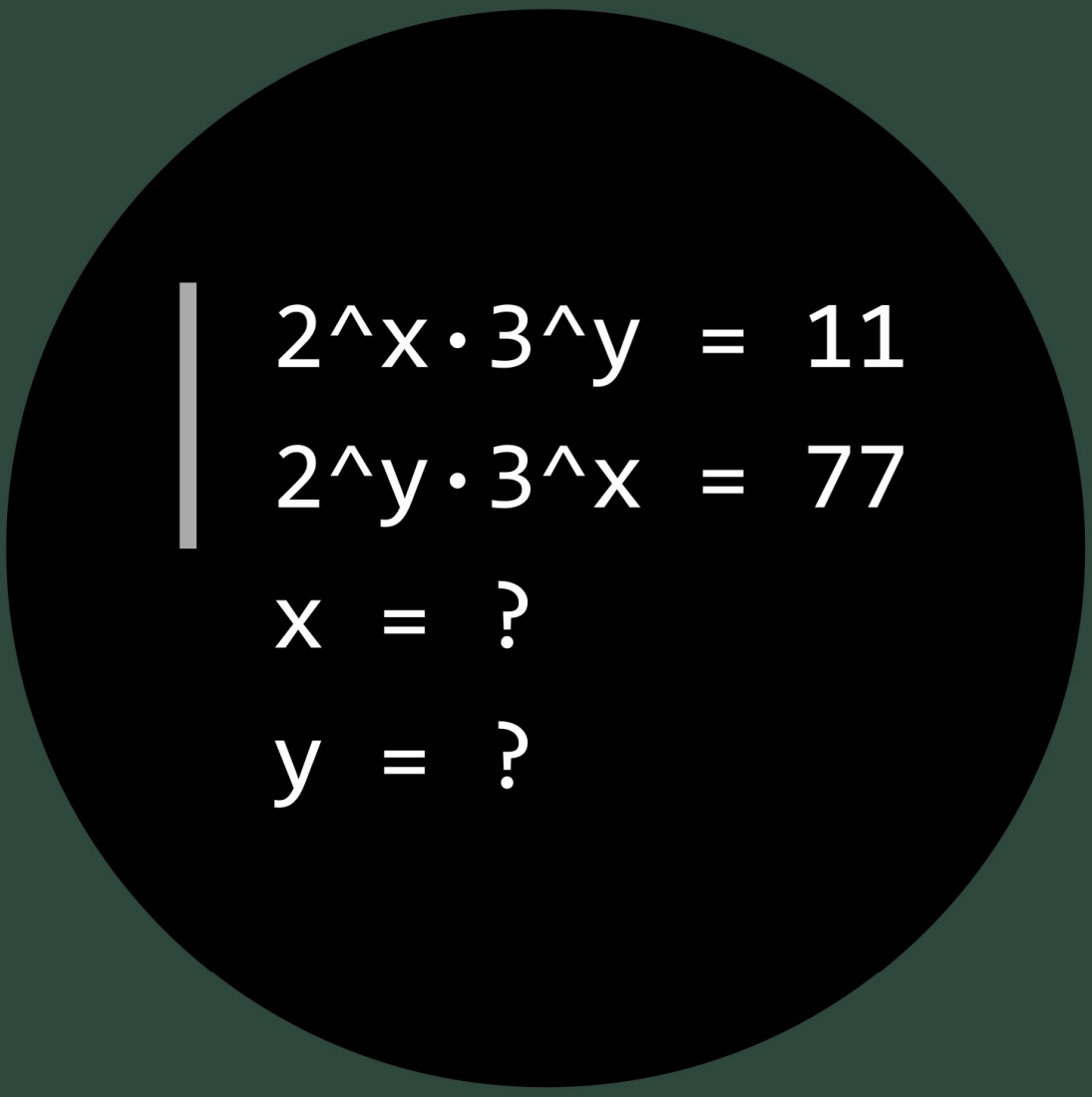
2^x·3^y = 11
2^y·3^x = 77
x = ?
y = ?

.-------------------------------------------------.
|                                                 |
|   LE BUT DE CET EXERCICE EST DE TROUVER PAR LES |
|                                                 |
|   LOGARITHMES UNE BASE COMMUNE POUR APPLIQUER:  |
|                                                 |
|             si a^x = a^y alors x = y            |
|                                                 |
.-------------------------------------------------.

---------- Q U E S T I O N ----------

| 2^x·3^y = 11
|
| 2^y·3^x = 77

x = ?

y = ?

(réponses attendues: x = 4,28090 et y = -0,51829)

---------- R É P O N S E ----------

| L1: 2^x·3^y = 11
|
| L2: 2^y·3^x = 77

L1·L2 = 2^x·3^y·2^y·3^x = 11·77

2^x·2^y·3^x·3^y = 11·77

2^(x + y)·3^(x + y) = 11·77

(2·3)^(x + y) = 11·77

6^(x + y) = 11·77

log[6](11·77) = 3,76261

6^(x + y) = 6^3,76261

même base (= 6), conséquence:

x + y = 3,76261

-----

| L1: 2^x·3^y = 11
|
| L2: 2^y·3^x = 77

L1/L2 = (2^x·3^y)/(2^y·3^x) = 11/77

(2^x/2^y)·(3^x/3^y) = 11/77

2^(x - y)/3^(x - y) = 11/77

(2/3)^(x - y) = 11/77

(2/3)^(x - y) = 11/77

log[2/3](11/77) = 4,79920

(2/3)^(x - y) = (2/3)^4,79920

même base (= 2/3), conséquence:

x - y = 4,79920

---

| L1: x + y = 3,76261
|
| L2: x - y = 4,79920

L1 + L2: x + y + x - y = 3,76261 + 4,79920

2x = 8,56181

.--------------.
| x = 4,28090 |
·--------------·

x + y = 3,76261

4,28090 + y = 3,76261

y = 3,76261 - 4,28090

.---------------.
| y = -0,51829 |
·---------------·