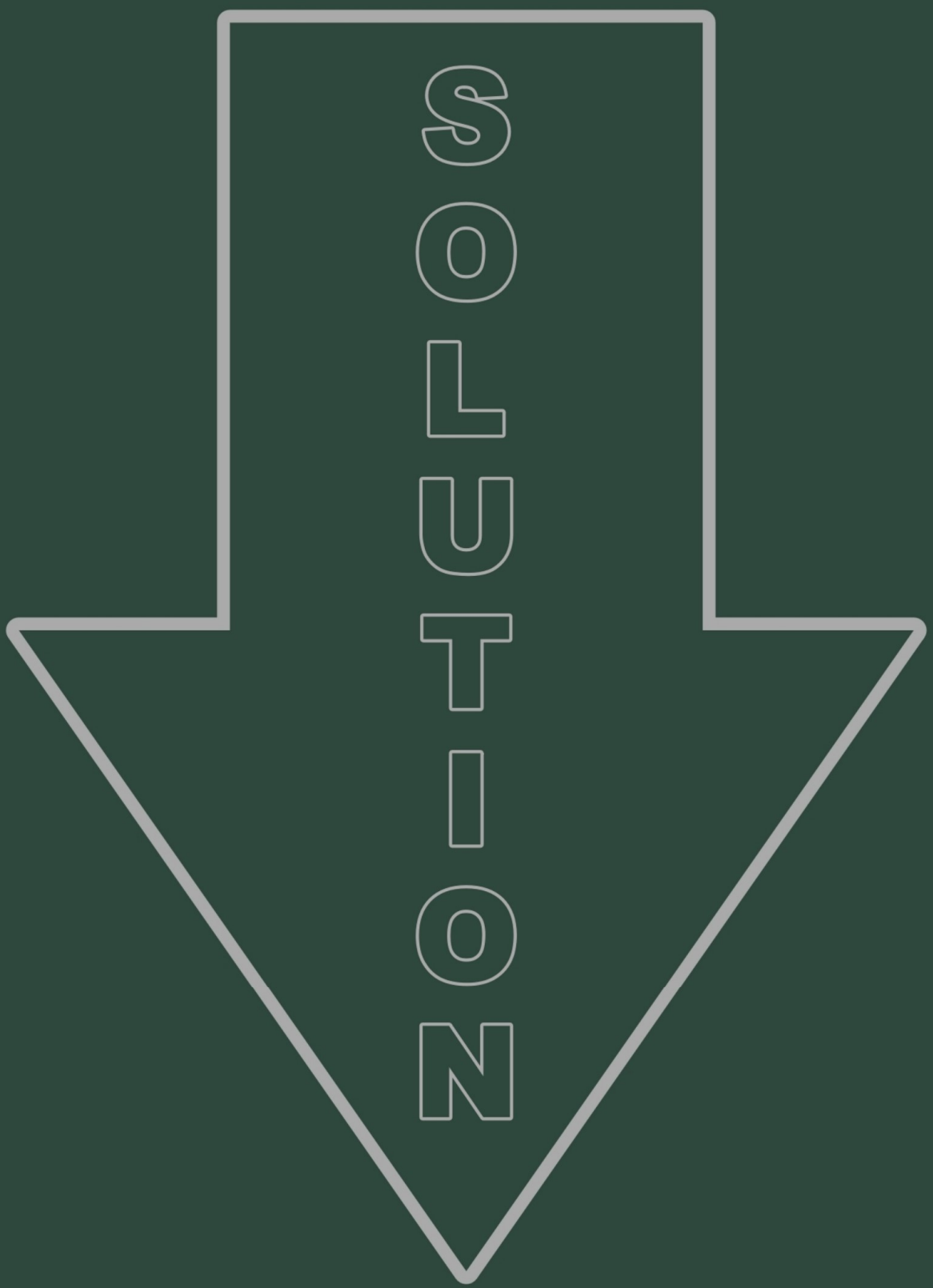
$$\begin{cases} x^2 - y^2 = 5 \\ xy = 6 \end{cases}$$

$$x = ?$$

$$y = ?$$


SOLUTION

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

| $x^2 - y^2 = 5$
|
| $xy = 6$

$x = ?$ et $y = ?$

---------- R É P O N S E ----------

| $x^2 - y^2 = 5$
|
| $xy = 6$

| $x^2 + y^2 = 5$
|
| $x^2y^2 = 36$

soit $X = x^2$

soit $Y = -y^2$

| $X + Y = 5$
|
| $XY = -36$

| $X + Y = 5 = S$ (comme Somme)
|
| $XY = -36 = P$ (comme Produit)

rappel:

~~~~~~
les racines de $z^2 - Sz + P = 0$ sont X et Y
~~~~~~

application:

$z^2 - 5z - 36 = 0$

$\Delta = 5^2 - 4 \cdot 1 \cdot (-36) = 25 + 144 = 169$

√Δ = ±√69 ±13

• racine #1: z = X = (-(-5) + 13)/2·1 = 18/2 = 9

• racine #2: z = Y = (-(-5) - 13)/2·1 = -8/2 = -4

----- X = 9 -----

rappel: $x^2 = X$

$x^2 = 9$

```
 ------------
|   x = ±3   |
 ------------
```

----- Y = -4 -----

rappel: $-y^2 = Y$

$-y^2 = -4$

$y^2 = 4$

```
 ------------
|   y = ±2   |
 ------------
```

----- vérification -----

x = 3 et y = 2

• $x^2 - y^2 = 3^2 - 2^2 = 9 - 4 = 5$ <--- ok

• $xy = 3 \cdot 2 = 6$ <--- ok

x = -3 et y = -2

• $x^2 - y^2 = (-3)^2 - (-2)^2 = 9 - 4 = 5$ <--- ok

• $xy = (-3) \cdot (-2) = 6$ <--- ok