

Ejemplo

$$40 = x + y \longrightarrow y = 40 - x$$

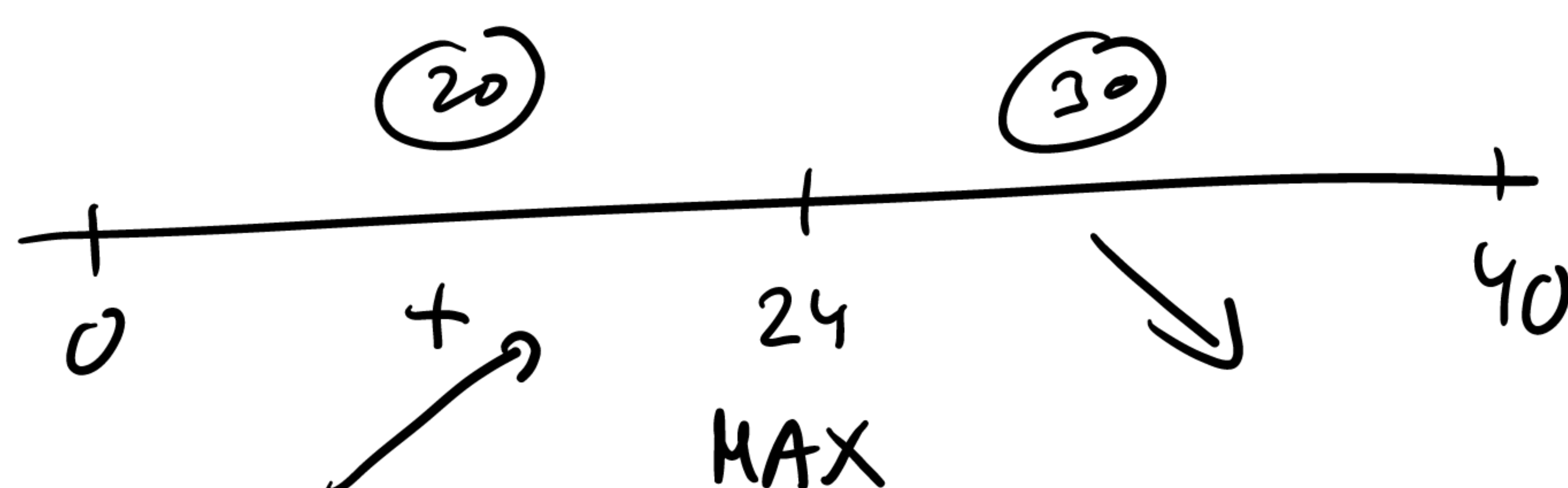
$$f(x, y) = x^3 y^2 \Rightarrow \text{MÁXIMO} \quad f(x, y) = x^3 (40 - x)^2$$

$$f'(x, y) = 3x^2 (40 - x)^2 + x^3 \cdot 2(40 - x)(-1) = 3x^2 (40 - x)^2 - 2x^3 (40 - x) =$$

$$= (40 - x) [3x^2 (40 - x) - 2x^3] = (40 - x) [120x^2 - 3x^3 - 2x^3] = (40 - x) (120x^2 - 5x^3) = 0$$

$$1) 40 - x = 0 \Rightarrow \boxed{x = 40}$$

$$2) 120x^2 - 5x^3 = 0 \Rightarrow x^2 (120 - 5x) = 0 \begin{cases} \boxed{x = 0} \\ 120 - 5x = 0 \Rightarrow \boxed{x = \frac{120}{5} = 24} \end{cases}$$



$$\boxed{y = 40 - 24 = 16}$$

$$\boxed{40 = 24 + 16}$$