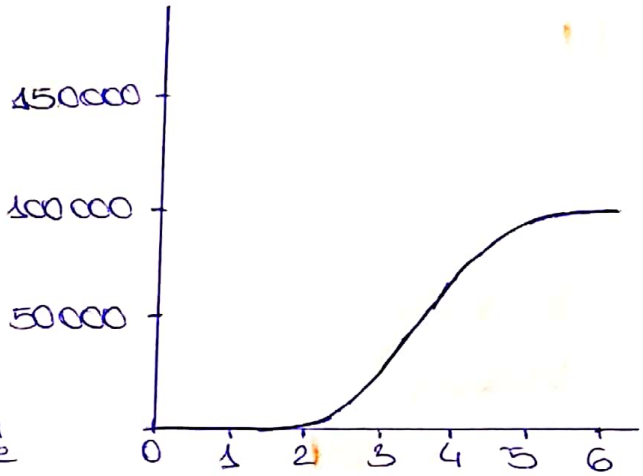
→ Match up each label with its graphic and interpretate the variables "x" and "y" in each case. Deduce the reason for the choice of any of the numbers.

1- Number of rapidly dividing bacteria present in a food-limited environment starting from a small initial sample.

- X-axis: time (days).
- Y-axis: number of bacterias.

- H: $y(x) = \frac{1000000}{10 + (100000 - 10)2^{-4x}}$

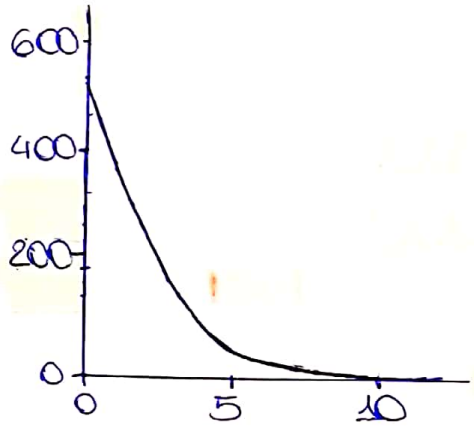
- $\lim_{x \to \infty} y(x) = 100000$ → Horizontal asymptote ↓ Maximum of bacterias.
- 2 => bipartition.



2- Concentration in the blood of a drug following an injection.

- X-axis: time (hours).
- Y-axis: drug's concentration in the blood.

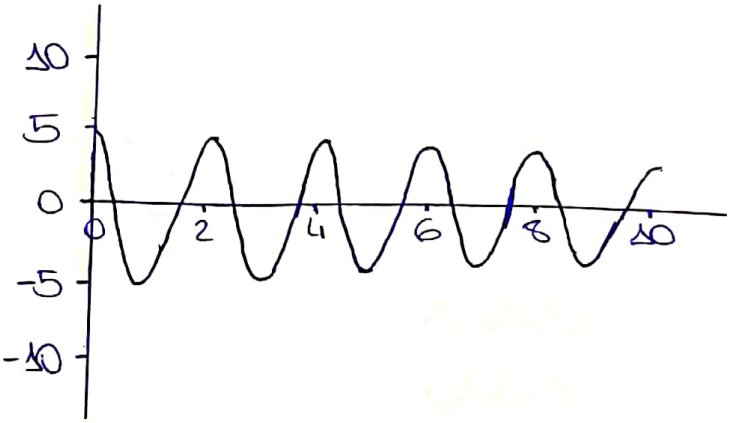
- B: $y(x) = 500 \cdot 2^{-0'6667x}$
- Initial concentration (cutting with y-axis)



3- Angle of oscillation of a real pendulum of length 1m in air.

- X-axis: time (seconds).
- Y-axis: displacement's angle.

- E: $y(x) = 5\cos(3'13x)e^{-0'05x}$
- The angle oscilates at 5°.

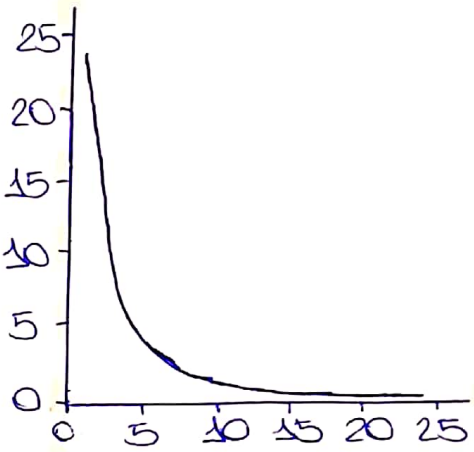


4 - Volume (litres) against pressure (atmospheres) for 1 mole of an ideal gase at 0°C.

- X-axis: volume.
- Y-axis: pressure.

- I: $y(x) \; x = 22'4133$

- PV = constant (Boyle's Law).

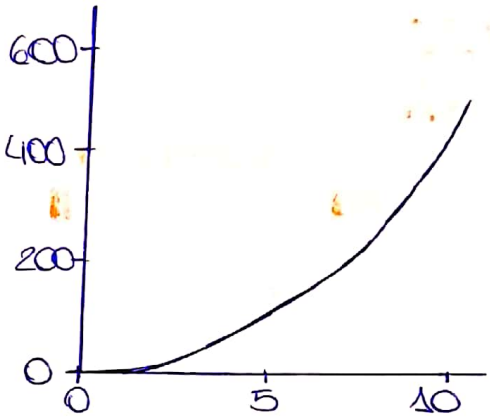


5 - Vertical distance travelled by a small, heavy ball dropped from a plane.

- X-axis: time (seconds).
- Y-axis: vertical distance.

- A: $y(x) = 4'9 \; x^2$

- $\frac{1}{2} g = 4'9 \; m/s^2$ ($g = 9'8 \; m/s^2$)

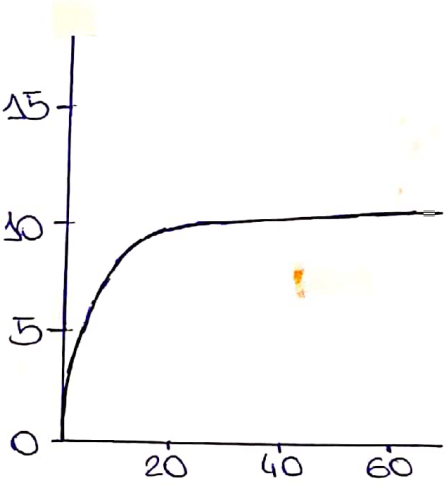


6 - Rate of a reaction of a catalysed reaction in terms of the concentration of the reagent.

- X-axis: reaction's rate
- Y-axis: reagent's concentration.

- F: $y(x) = \frac{11'3x}{2'1 + x}$

- $\lim_{x \to \infty} y(x) = 11'3 \rightarrow$ Horizontal asymptote ↓ Maximun of reagent.

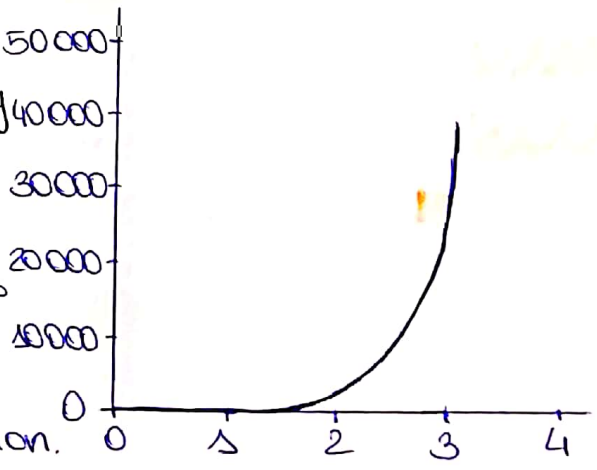


7 - Number of rapidly dividing bacteria present in a food-rich environment, starting from a small initial sample.

- X-axis: time (days).
- Y-axis: number of bacterias

- G: $y(x) = 10 \cdot 2^{4x}$

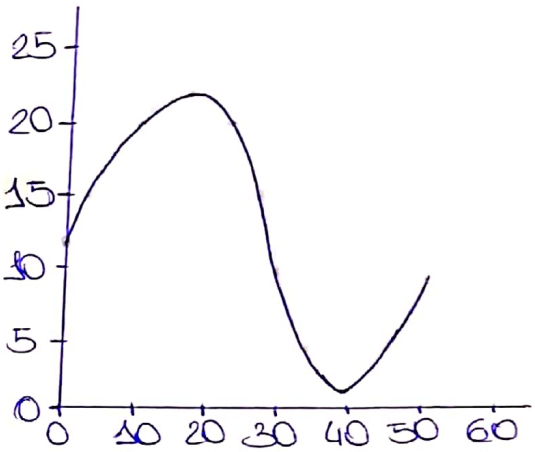
- $y(0) = 10$ (initial sample); $2 \Rightarrow$ bipartition.



8- Hours of daylight per day in a town in the far northen hemisphere.

- X-axis: time (weeks).
- Y-axis: daylilight's hour per day.

- D: $y(x) = 12 + 10\sin(0'121x)$
- Initial daylight's hour per day (cutting with y-axis).



9- Model of the distance of the Earth from the sun in astronomical units.

- X-axis: time (days).
- Y-axis: Earth's distance from the sun.

- C: $y(x) = 1 - 0'01671\cos(0'0172x)$
- Average Earth's distance from the sun in astronomical units.