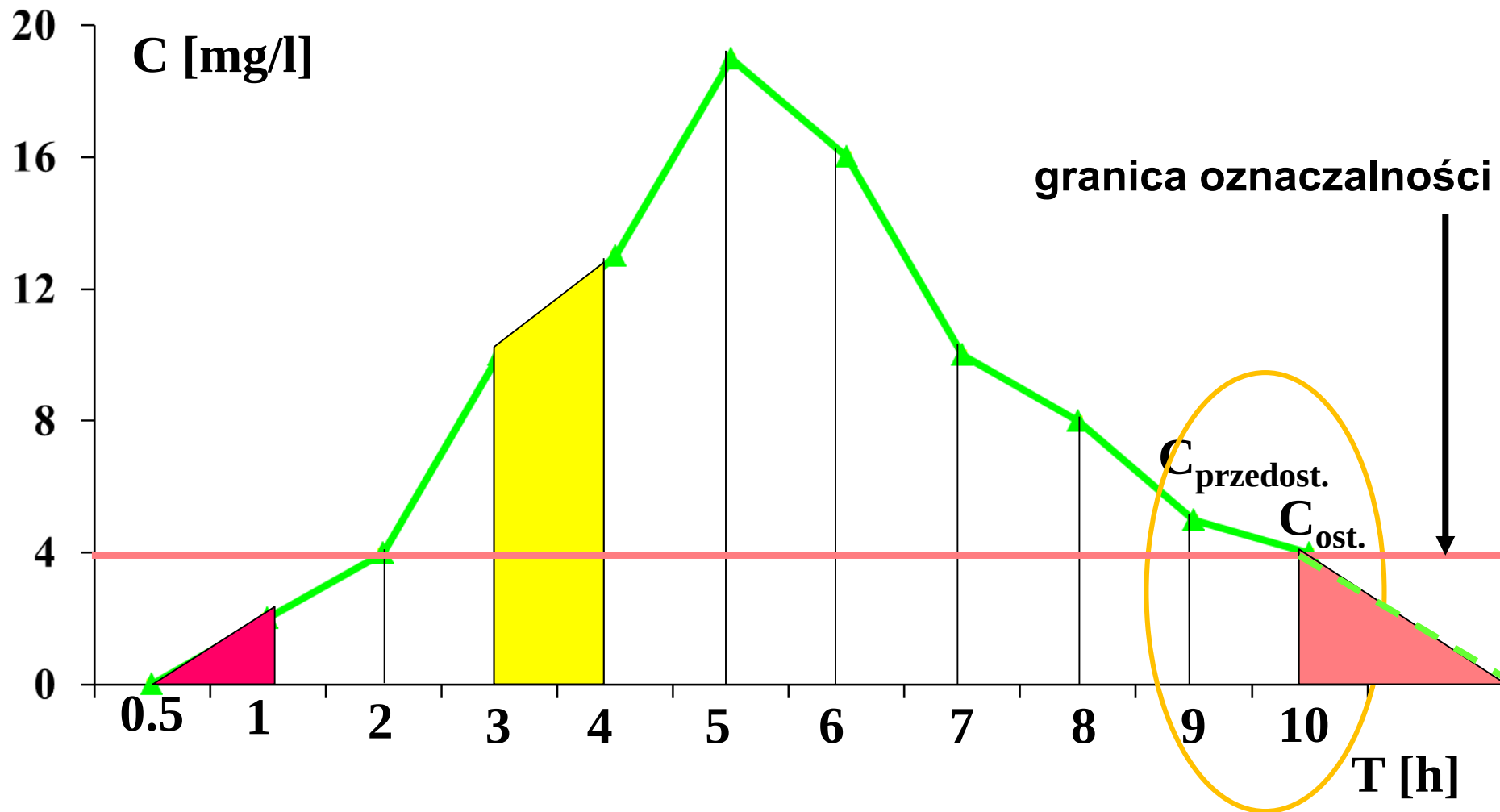


Obliczanie pola pod krzywą stężenie – czas (AUC) – metoda trapezów

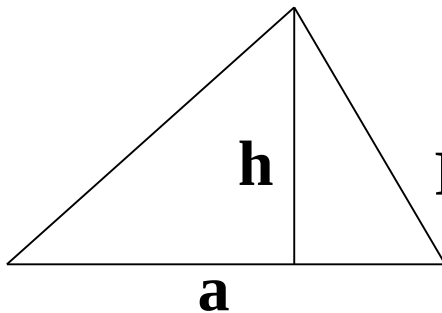


Podstawowe wzory

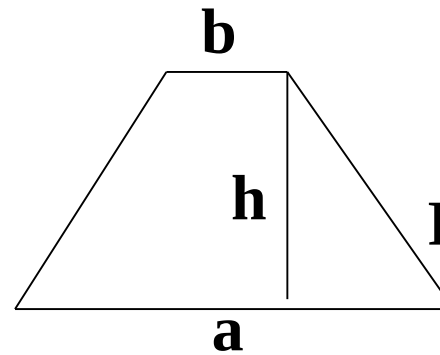
$$AUC_{\text{całkowite}}^{(0 \rightarrow \infty)} = AUC_{(0 \rightarrow t)} + AUC_{\text{reszkowe}}$$

$$AUC_{\text{reszkowe}} = \frac{\text{ostatnie zmierzone stężenie s.l. w osoczu}}{K}$$

$$K = \frac{\ln C_{\text{przedost.}} - \ln C_{\text{ost.}}}{T_{\text{ost.}} - T_{\text{przedost.}}}$$



$$\text{Pole} = 0.5 a \cdot h$$



$$\text{Pole} = 0.5 (a+b) \cdot h$$

$$AUC_{(0 \rightarrow t)} = \text{minimum } 80 \% AUC_{\text{całk.}}$$

Zadanie 1

Po domięśniowym podaniu tetracykliny w dawce $D=250\text{mg}$ znaleziono następujące stężenia tego antybiotyku w osoczu.

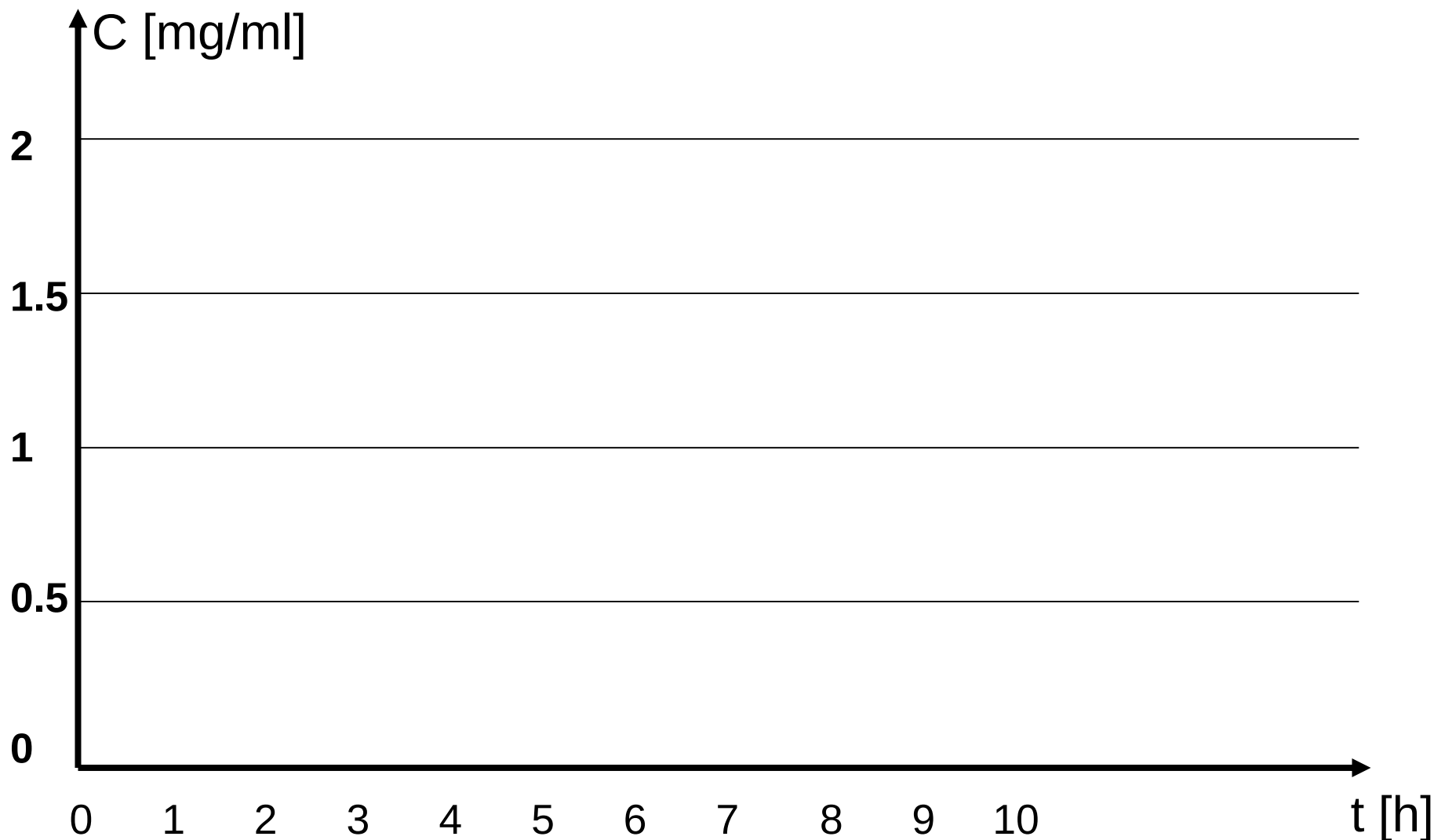
T [h]	1	2	3	4	6	8	10
C [mg/l]	0.93	1.98	1.46	1.40	1.13	0.88	0.68

Oblicz $AUC_{\text{całk.}}$

T [h]	1	2	3	4	6	8	10
C [mg/l]	0.93	1.98	1.46	1.40	1.13	0.88	0.68

Krok 1

Narysuj wykres zmian C-T.



Krok 2. Oblicz $AUC_{(0 \rightarrow 10)}$

$$\text{Pole 1} = 0.5 \cdot a \cdot h$$

$$AUC\ 1 = 0.5 \cdot \dots \cdot \dots = \dots \text{ mg} \cdot h / l$$

$$\text{Pole 2} = 0.5 (a + b) \cdot h$$

$$AUC\ 2 = 0.5 (\dots + \dots) \cdot \dots = \dots \text{ mg} \cdot h / l$$

$$AUC\ 3 = 0.5 (\dots + \dots) \cdot \dots = \dots \text{ mg} \cdot h / l$$

$$AUC\ 4 = 0.5 (\dots + \dots) \cdot \dots = \dots \text{ mg} \cdot h / l$$

$$AUC\ 5 = 0.5 (\dots + \dots) \cdot \dots = \dots \text{ mg} \cdot h / l$$

$$AUC\ 6 = 0.5 (\dots + \dots) \cdot \dots = \dots \text{ mg} \cdot h / l$$

$$AUC\ 7 = 0.5 (\dots + \dots) \cdot \dots = \dots \text{ mg} \cdot h / l$$

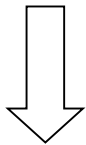
$$AUC_{(0 \rightarrow 10)} = AUC1 + AUC2 + AUC3 + AUC4 + AUC5 + AUC6 + AUC7$$

$$AUC_{(0 \rightarrow 10)} = \dots \text{ mg} \cdot h / l$$

Krok 3. Oblicz $AUC_{\text{resztkowe}}$

$$AUC_{\text{resztkowe}} = \frac{\text{ostatnie zmierzone stężenie s.l. w osoczu}}{K}$$

$$K = \frac{\ln C_{\text{przedost.}} - \ln C_{\text{ost.}}}{T_{\text{ost.}} - T_{\text{przedost.}}}$$



$$K = \frac{\ln \dots - \ln \dots}{\dots - \dots} = \dots \cdot 1/h$$

..... -

$$AUC_{\text{resztkowe}} = \frac{\dots}{\dots} = \dots \text{ mg} \cdot \text{h} / \text{l}$$

Krok 4. Oblicz $AUC_{\text{całkowite}}$

$$AUC_{(0 \rightarrow 10)} = \dots \text{ mg} \cdot \text{h} / \text{l}$$

$$AUC_{\text{resztkowe}} = \dots \text{ mg} \cdot \text{h} / \text{l}$$

$$AUC_{\text{całkowite}} = AUC_{(0 \rightarrow 10)} + AUC_{\text{resztkowe}}$$

$$AUC_{\text{całkowite}} = \dots \text{ mg} \cdot \text{h} / \text{l}$$