

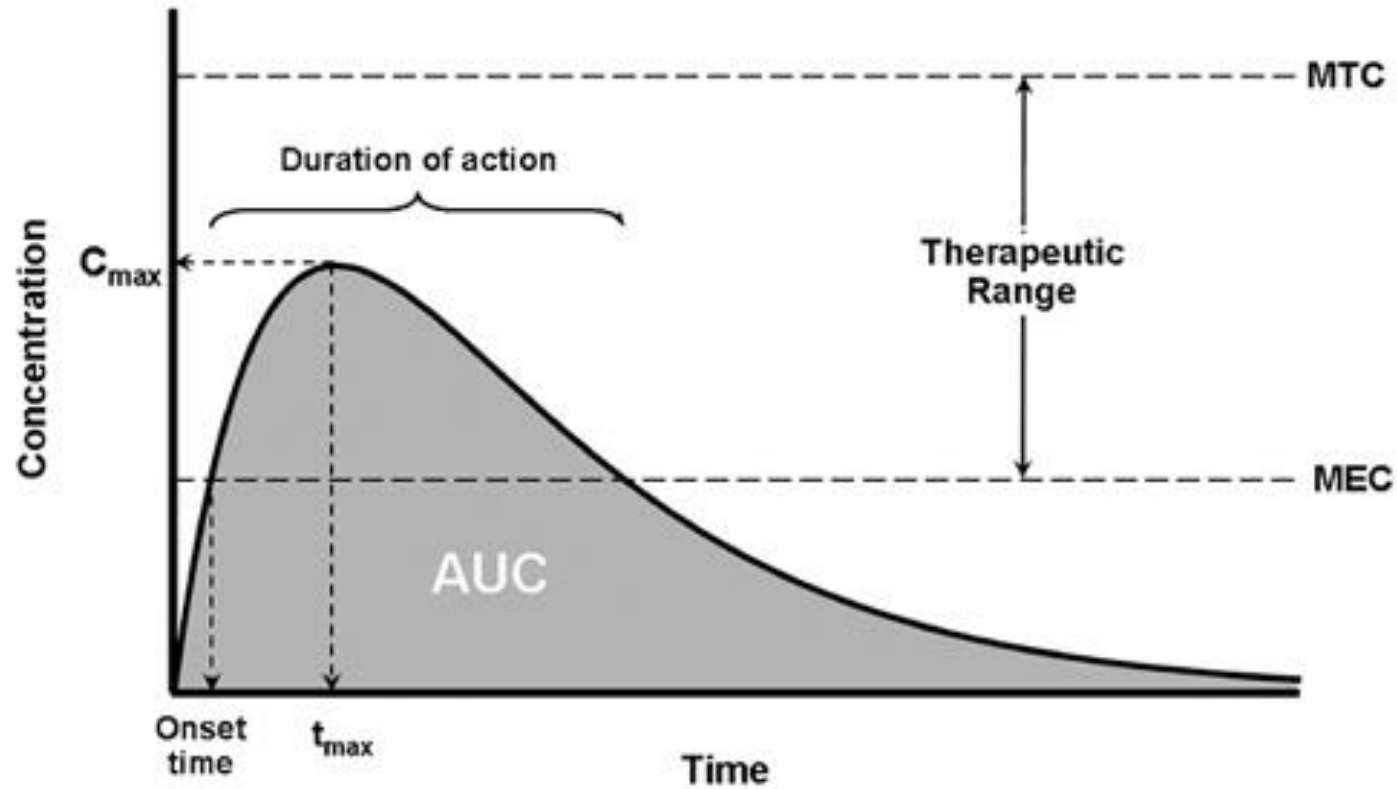


LIMITS AT INFINITY; HORIZONTAL ASYMPTOTES

LESSON 3.4



DRUG CONCENTRATION IN THE BLOODSTREAM AS A FUNCTION OF TIME



Source: medscape.com

PROBLEM

Study the following three limits.

$$(a) \lim_{x \rightarrow \infty} \frac{2x^2 - 4}{3x^2 + x}, \quad L = \frac{2}{3}$$

$$(b) \lim_{x \rightarrow \infty} \frac{2x^2 - 4}{3x^3 + x}, \quad L = 0$$

$$(c) \lim_{x \rightarrow \infty} \frac{2x^3 - 4}{3x^2 + x}, \quad \text{limit does not exist.}$$

Explain how these limits can be determined by inspection.

PROBLEM

Evaluate $\lim_{x \rightarrow \infty} \frac{\sin x}{x}$.

Compare/contrast this with
the problem $\lim_{x \rightarrow \infty} \sin x$.