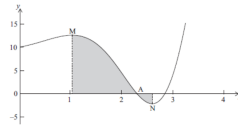


IB Calculus Problem 21

Let $f(x) = e^x \sin 2x + 10$, with $0 \leq x \leq 4$.

Part of the graph of f is shown below.

The figure is not to scale.



Shown are an x -intercept at point A , a local maximum at point M with $x = p$ and a local minimum at point N with $x = q$.

A. State the x -coordinate of A .

B. Find the value of

i. p

ii q

C. Find $\int_p^q f(x) dx$.

Explain why this is not the area of the shaded region.