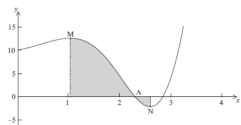


## IB Calculus Problem 021

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



$f$  is given below.

Calculate

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

A. Write down 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.