

15.

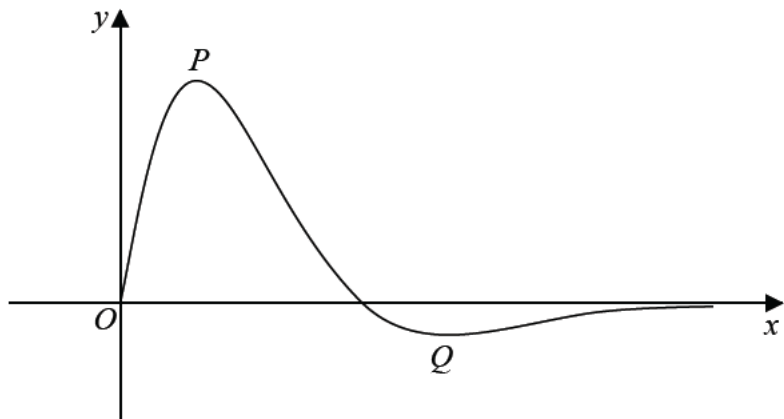
**Figure 5**

Figure 5 shows a sketch of the curve with equation $y = f(x)$, where

$$f(x) = \frac{4\sin 2x}{e^{\sqrt{2}x-1}}, \quad 0 \leq x \leq \pi$$

The curve has a maximum turning point at P and a minimum turning point at Q as shown in Figure 5.

(a) Show that the x coordinates of point P and point Q are solutions of the equation

$$\tan 2x = \sqrt{2} \quad (4)$$

(b) Using your answer to part (a), find the x -coordinate of the minimum turning point on the curve with equation

(i) $y = f(2x)$.

(ii) $y = 3 - 2f(x)$.

(4)