

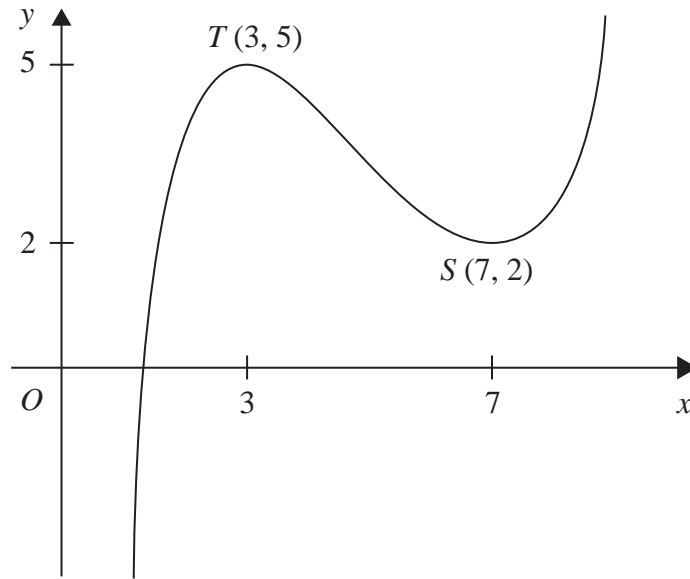






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3.



**Figure 1**

Figure 1 shows the graph of  $y = f(x)$ ,  $1 < x < 9$ .  
The points  $T(3, 5)$  and  $S(7, 2)$  are turning points on the graph.

Sketch, on separate diagrams, the graphs of

(a)  $y = 2f(x) - 4$ , (3)

(b)  $y = |f(x)|$ . (3)

Indicate on each diagram the coordinates of any turning points on your sketch.













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**Question 6 continued**

Handwriting practice area consisting of 30 horizontal lines.



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7.

$$f(x) = 3xe^x - 1$$

The curve with equation  $y = f(x)$  has a turning point  $P$ .

(a) Find the exact coordinates of  $P$ .

(5)

The equation  $f(x) = 0$  has a root between  $x = 0.25$  and  $x = 0.3$

(b) Use the iterative formula

$$x_{n+1} = \frac{1}{3}e^{-x_n}$$

with  $x_0 = 0.25$  to find, to 4 decimal places, the values of  $x_1, x_2$  and  $x_3$ .

(3)

(c) By choosing a suitable interval, show that a root of  $f(x) = 0$  is  $x = 0.2576$  correct to 4 decimal places.

(3)

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