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5. $f(x) = x^4 - 12x^{\frac{3}{2}} + 7 \qquad x \geqslant 0$

(a) Show that the equation $f(x) = 0$ has a root, α, in the interval [2, 3].

(2)

(b) Taking 2.5 as a first approximation to α, apply the Newton-Raphson procedure once to $f(x)$ to find a second approximation to α, giving your answer to 2 decimal places.

(4)

(c) Show that your answer to (b) gives α correct to 2 decimal places.

(2)

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Question 5 continued

Q5

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