(a) By sketching the graphs of

$$y = |5 - 2x| \qquad \text{and} \qquad y = 3\ln x$$

on the same diagram, show that the equation $|5 - 2x| = 3\ln x$ has exactly two roots.   [3]

(b) Show that the value of the larger root satisfies the equation $x = 2.5 + 1.5\ln x$.   [1]

....

....

....

....

....

....

....$y = |5 - 2x|$.............and...........$y = 3\ln x$...

(c) Show by calculation that the value of the larger root lies between 4.5 and 5.0. [2]

....

....

....

....

....

....

....

....

....

....

....

(d) Use an iterative formula, based on the equation in part **(b)**, to find the value of the larger root correct to 3 significant figures. Give the result of each iteration to 5 significant figures. [3]

....

....

....

....

....

....

....

....

....

....