3. A triangular plot of land, ABC, has area $60\ \text{m}^2$

Given

- $AB = 15\ \text{m}$
- $AC = 10\ \text{m}$
- angle $BAC = \theta°$

(a) show that $\sin\theta° = \frac{4}{5}$

(1)

Given also that $\theta°$ is the **largest** angle in the triangle,

(b) find the length of the side BC, in metres, to 3 significant figures,

(3)

(c) find the size of the **smallest** angle in the triangle, in degrees, to one decimal place.

(2)

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Question 3 continued

(Total for Question 3 is 6 marks)

4. **In this question you must show all stages of your working.**
Solutions relying on calculator technology are not acceptable.

$$f(x) = x^3 - 2x^2\sqrt{x} + 14 \qquad x > 0$$

(a) Solve the equation

$$f'(x) = 0$$

(5)

(b) (i) Show that the equation

$$f''(x) = 66$$

can be written as

$$4x - 5x^{\frac{1}{2}} - 44 = 0$$

(ii) Hence, using algebra, show that $x = 16$ is the only solution of the equation

$$f''(x) = 66$$

(5)

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