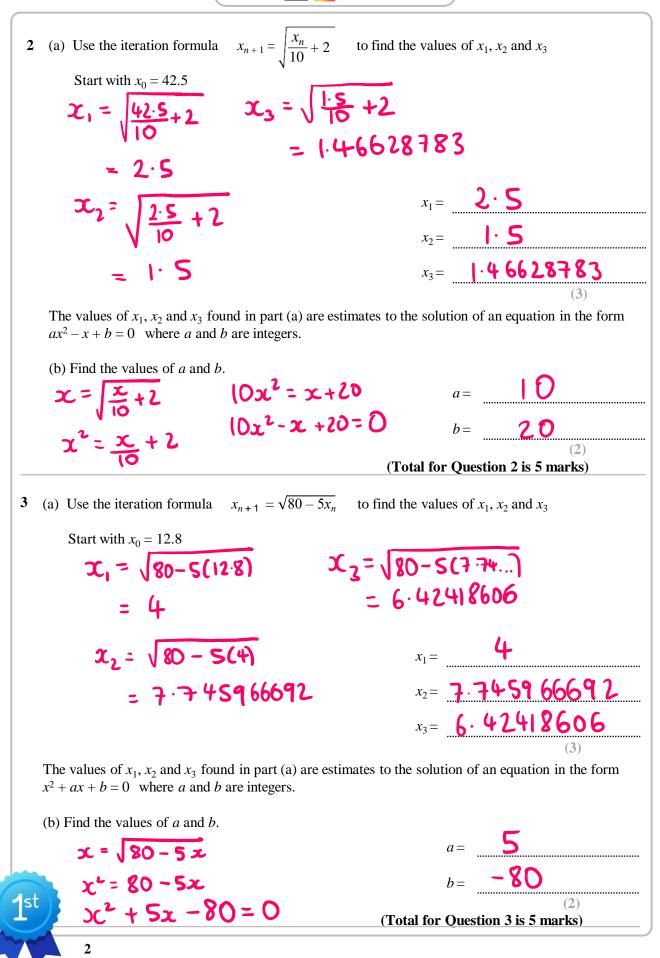
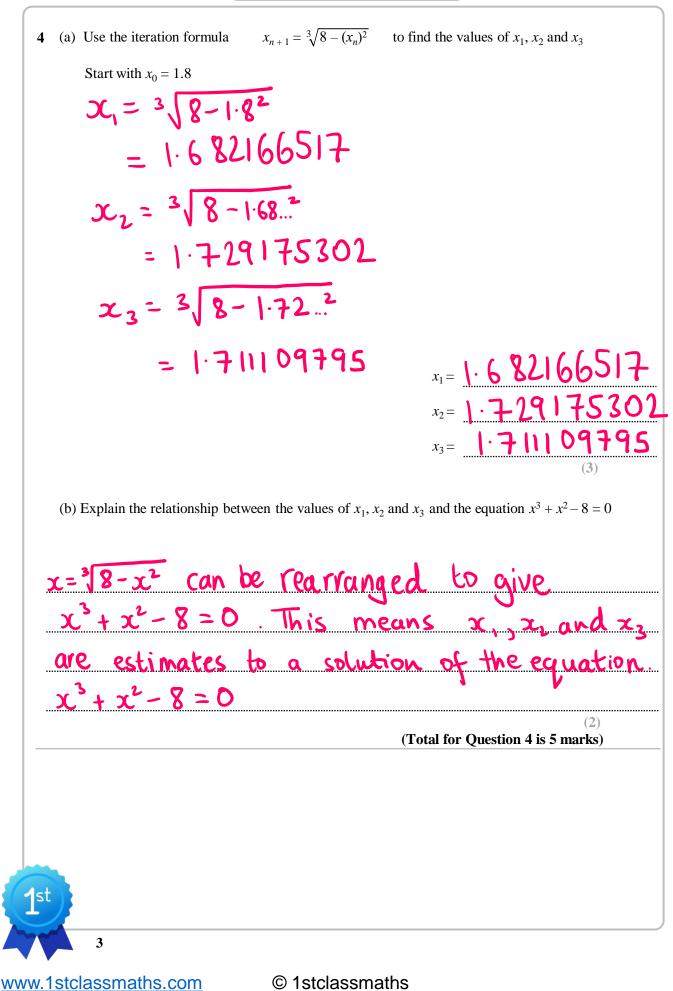


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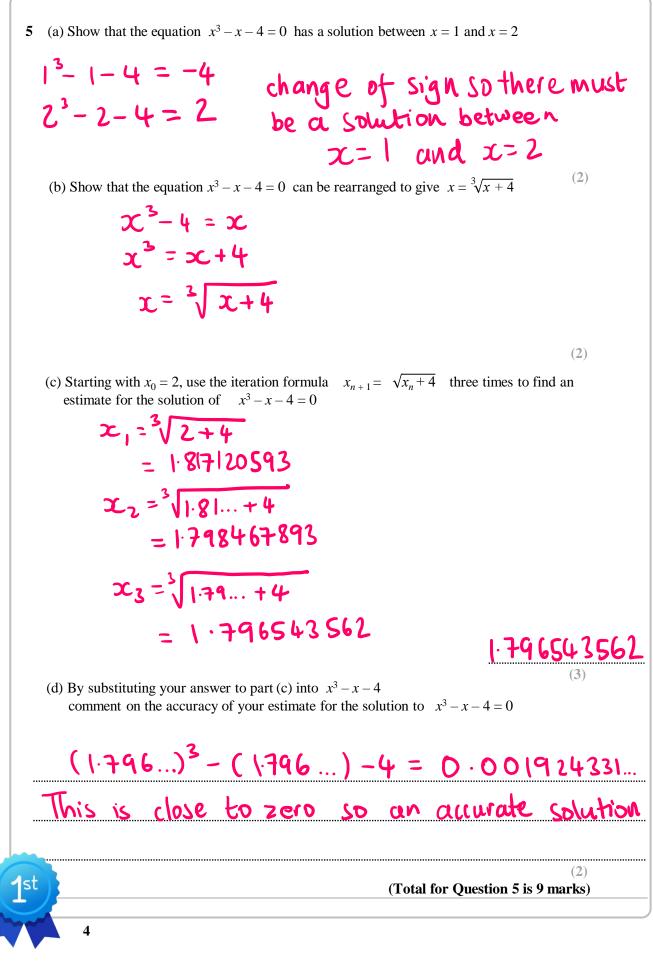


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6 (a) Show that the equation $x^2 + x - 13 = 0$ has a solution between x = 3 and x = 4

$$3^{2} + 3 - 13 = -1 \quad \text{change of sigh So there must}$$

$$y^{2} + 4 - 13 = 7 \quad \text{be a solution between}$$

$$x = 3 \quad \text{and} \quad x = 4 \quad (2)$$
(b) Show that the equation $x^{2} + x - 13 = 0$ can be rearranged to give $x = \sqrt{13-x}$

$$x^{2} + x = -13 = 0 \quad x^{2} + x = -13 = 0$$
(c)
(c) Show that the equation of $x^{2} + x = 13$

$$x^{2} = 13 - x$$

$$x = \sqrt{13-x}$$
(c)
(c) Starting with $x_{0} = 3$, use the iteration formula $x_{n+1} = \sqrt{13-x_{n}}$ three times to find an estimate for the solution of $x^{2} + x - 13 = 0$

$$x_{1} = \sqrt{13-3}$$

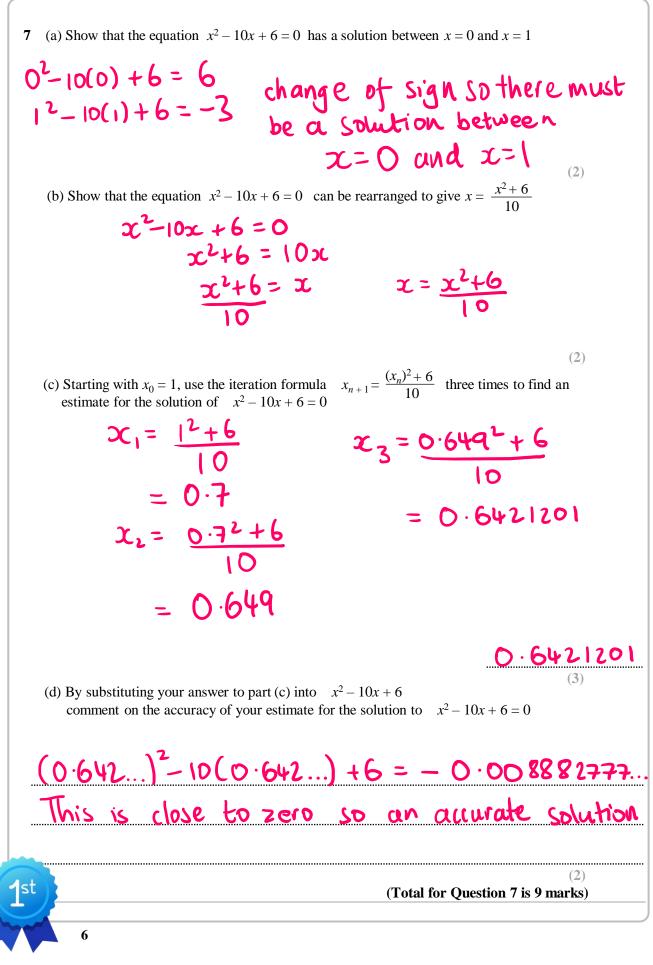
$$= 3 \cdot 162227766$$

$$x_{2} = \sqrt{13-3} \cdot 16...$$

$$= 3 \cdot 136514361$$

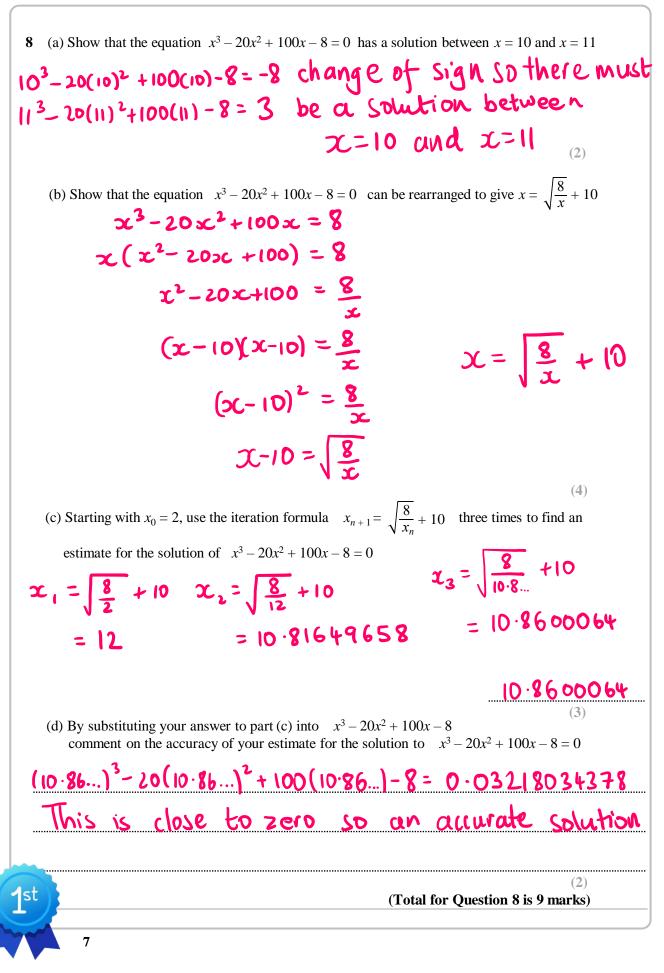
$$x_{3} = \sqrt{13-3} \cdot 18...$$
(d) By substituting your answer to part (c) into $x^{2} + x - 13 = 0$
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(d) By substituting your answer to part (c) into $x^{2} + x - 13 = 0$
(f) Countert on the accuracy of your estimate for the solution to $x^{2} + x - 13 = 0$
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(f) By substituting your answer to part (c) into $x^{2} + x - 13 = 0$
(f) By substituting your answer to part (c) into $x^{2} + x - 13 = 0$
(g) Countert on the accuracy of your estimate for the solution to $x^{2} + x - 13 = 0$
(g) Countert on the accuracy of your estimate for the solution to $x^{2} + x - 13 = 0$
(g) (Total for Question 6 is 9 marks)
(g) Solution (g) Sol

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