1 Show that $\frac{\sqrt{8}}{\sqrt{8}-2}$ can be written in the form $n+\sqrt{n}$, where *n* is an integer.

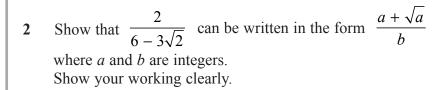
Show your working clearly.

(3)

(b) Show that $\frac{\sqrt{20} + \sqrt{80}}{\sqrt{3}}$ can be expressed in the form \sqrt{a} where a is an integer.

Show your working clearly.

(3)



(3)

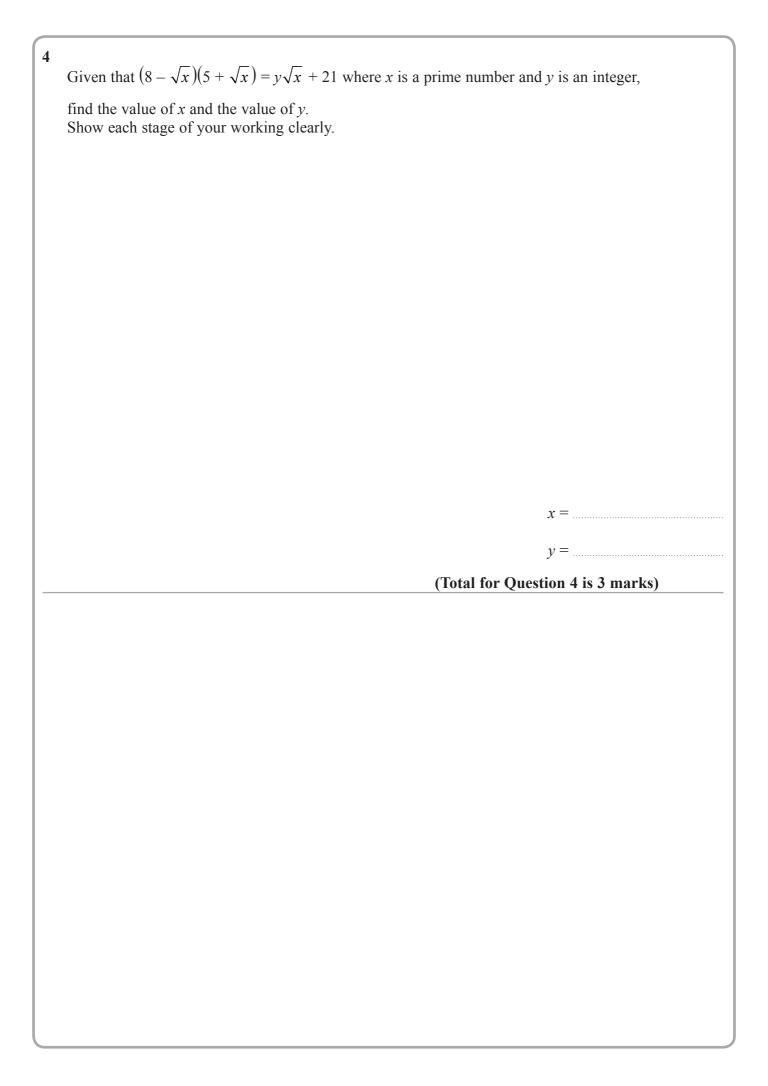
Given that *y* is a prime number,

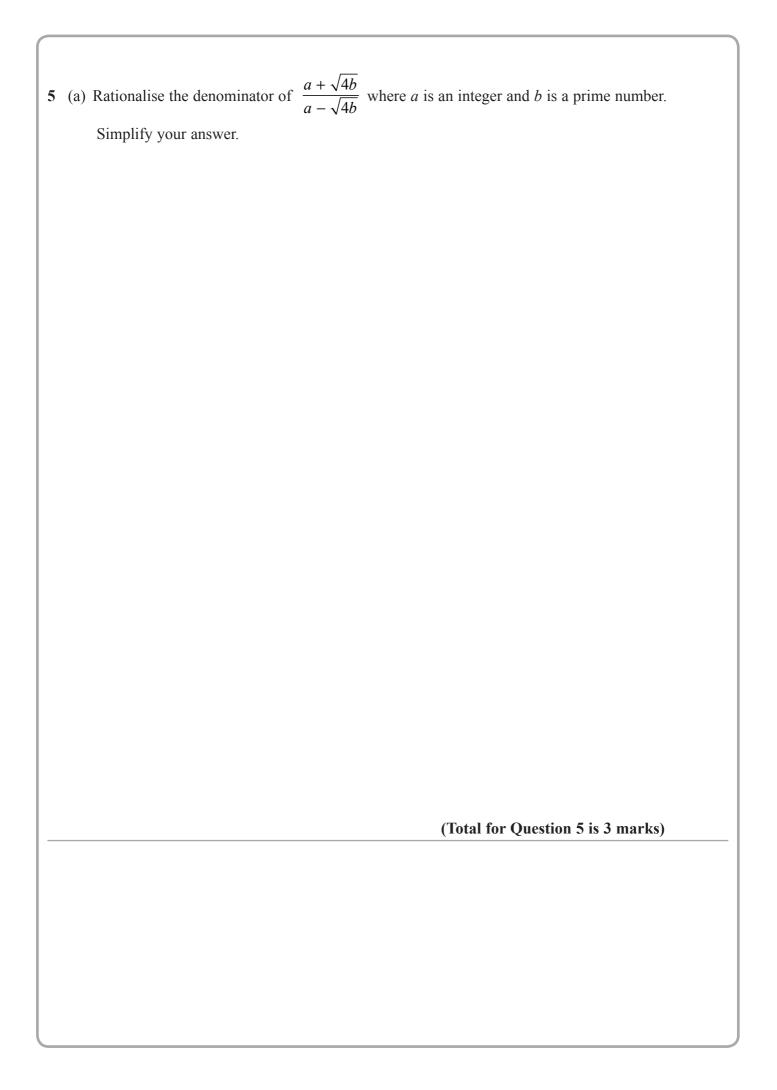
(b) express $\frac{3}{2-\sqrt{y}}$ in the form $\frac{a+b\sqrt{y}}{c-y}$ where a, b and c are integers.

(2)

(Total for Question 2 is 5 marks)

3 $a = \sqrt{8} + 4$ $b = \sqrt{8} - 4$ (a-b)(a+b) can be written in the form $y\sqrt{4y}$ Find the value of *y* Show your working clearly. *y* = (Total for Question 13 is 3 marks)





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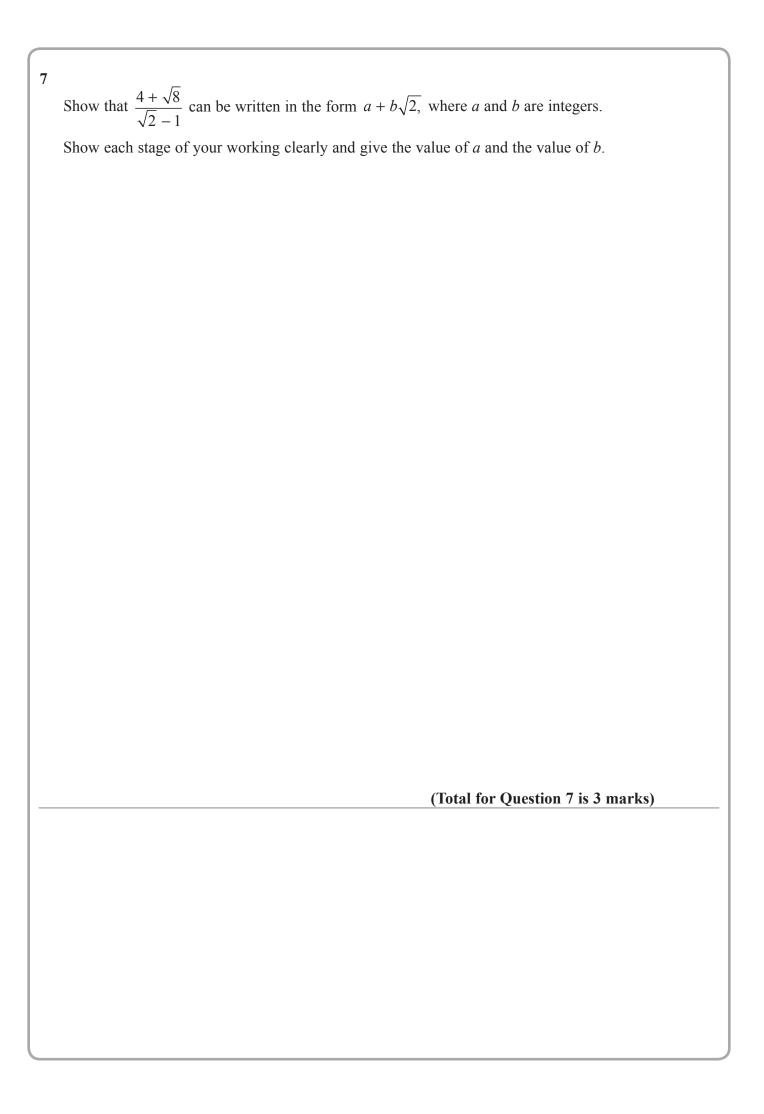
(a) Show that $(6 + 2\sqrt{12})^2 = 12(7 + 4\sqrt{3})$ Show each stage of your working.

(3)

(b) Without using a calculator, rationalise the denominator of $\frac{6}{3-\sqrt{7}}$

Simplify your answer.

You must show each stage of your working.



8 Express $\frac{8}{\sqrt{5}-1}$ in the form $\sqrt{a}+b$ where a and b are integers.			
Show each stage of your working clearly.			
(Total for Overtion 9 is 2 marks)			
(Total for Question 8 is 3 marks)			

9 Show that $\frac{\sqrt{12}}{\sqrt{3}+2}$

can be written in the form $a + \sqrt{b}$ where a and b are integers.

(Total for Question 9 is 3 marks)

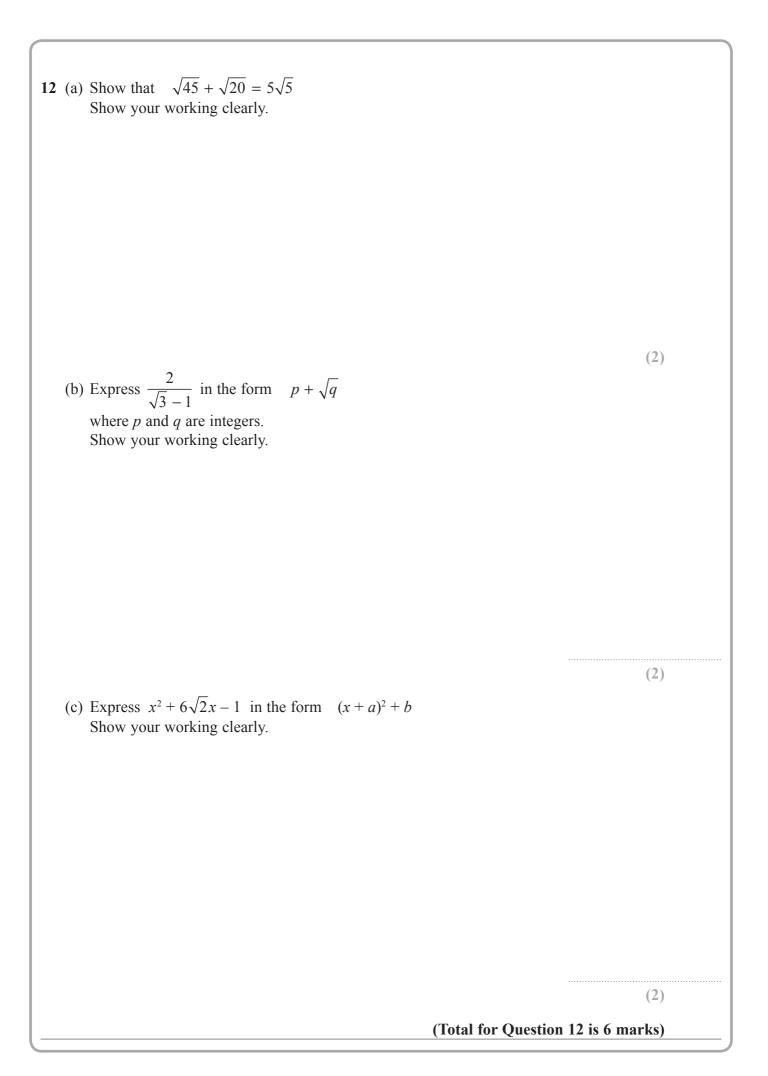
10 Without using a calculator, show that $\frac{12}{\sqrt{2}-1} - (\sqrt{2})^5 = 2\sqrt{32} + 12$ Show your working clearly.

(Total for Question 10 is 3 marks)

11 Express $\frac{3+\sqrt{8}}{\left(\sqrt{2}-1\right)^2}$ in the form $p+\sqrt{q}$ where p and q are integers.

Show each stage of your working clearly.

(Total for Question 11 is 4 marks)



13 The area of a rectangle is 18 cm ²			
The length of the rectangle is $(\sqrt{7} + 1)$ cm.			
Without using a calculator and showing each stage of your working,			
find the width of the rectangle. Give your answer in the form $a\sqrt{b} + c$ where a , b and c are integers.			
	cm		
(Total for Question 13 is	3 marks)		