B1 $1.5 < x < 2$. Accept versions such as $(1.5, 2)$, $x > 1.5$ **and** $x < 2$, $x > 1.5 \cap x < 2$

Do not allow $x > 1.5$ or $x < 2$ $x > 1.5,\ x < 2$

Question Number	Scheme	Marks
4.	$\frac{4x^2+1}{2\sqrt{x}} = \frac{4x^2}{2\sqrt{x}} + \frac{1}{2\sqrt{x}} = 2x^{\frac{3}{2}} + \frac{1}{2}x^{-\frac{1}{2}}$	M1 A1
	$\int \frac{4x^2+1}{2\sqrt{x}}\,dx = \frac{4}{5}x^{\frac{5}{2}} + x^{\frac{1}{2}} + c$	M1 A1 A1 **(5 marks)**

M1 Attempts to write $\frac{4x^2+1}{2\sqrt{x}}$ as a **sum of two terms**.

Award if any index is correct and processed for a form $Px^m + Qx^n$

Do not allow if the indices are un processed Eg. $\frac{x^2}{\sqrt{x}} = x^{2-\frac{1}{2}}$

A1 $2x^{\frac{3}{2}} + \frac{1}{2}x^{-\frac{1}{2}}$ oe. The coefficients do not have to be simplified. Condone $\frac{4x^{\frac{3}{2}} + x^{-\frac{1}{2}}}{2}$ for M1 A1

M1 Raises the power of one **correct** index by one.

The index must be processed correctly so award for sight of $\rightarrow ...x^{\frac{5}{2}}$ or $...x^{\frac{1}{2}}$

A1 For one correct term and in simplest form. Either $+\frac{4}{5}x^{\frac{5}{2}}$ or $+x^{\frac{1}{2}}$

A1 Fully correct $\frac{4}{5}x^{\frac{5}{2}} + x^{\frac{1}{2}} + c$. Accept exact equivalent simplified answers such as $0.8x^2\sqrt{x} + \sqrt{x} + c$

Condone spurious notation such as $\int$ or a dx

Condone $\frac{4}{5}x^{\frac{5}{2}} + 1x^{\frac{1}{2}} + c$

Question Number	Scheme	Marks
5.(a)	$2x^3+3x^2-35x=0 \Rightarrow x\left(2x^2+3x-35\right)=0$	M1
	$(2x-7)(x+5)=0 \Rightarrow x=...$	dM1
	$x=-5,\ 0,\ \frac{7}{2}$	A1
		(3)
(b)	$2(y-5)^6+3(y-5)^4-35(y-5)^2=0$	
	States that $y=5$ is a solution	B1
	$(y-5)^2="\frac{7}{2}" \Rightarrow y=...$	M1
	$y=5+\sqrt{\frac{7}{2}}$ or $y=5-\sqrt{\frac{7}{2}}$ or exact equiavlent	A1ft
	Both $y=5+\sqrt{\frac{7}{2}}$ and $y=5-\sqrt{\frac{7}{2}}$ or exact equivalent.	A1
		(4)
		(7 marks)

(a)

M1 Takes out a common factor of *x*. Score if each term is divided by *x*.

dM1 Attempts to solve the resulting quadratic **via algebra** (usual rules). Allow factorisation, formula or completion of square. They cannot just write down answers from their calculator for this mark.

A1 $x=-5,\ 0,\ \frac{7}{2}$

Note 1: Some candidates will just write down their answers from a calculator. This scores 0,0,0

Note 2: Some students will attempt to solve the cubic by the quadratic formula Eg.

$2x^3+3x^2-35x=0 \Rightarrow a=2, b=3, c=-35$ and use $x=\frac{-b\pm\sqrt{b^2-4ac}}{2a} \Rightarrow x=-5,\ \frac{7}{2}$

This scores 0,0,0 as the method used is incorrect

(b)

B1 States that 5 is a solution of the given equation in (b)

M1 Realises that $x=(y-5)^2$ and proceeds to find a value for *y* using $(y-5)^2="\frac{7}{2}" \Rightarrow y=...$ Follow through on any positive value from (a). Allow decimal answers here. Don't be overly concerned by the mechanics of their solution.

A1ft A solution of $5+\sqrt{\frac{7}{2}}$ or $5-\sqrt{\frac{7}{2}}$ You should follow through on their positive root.

Allow decimals for this mark only. So accept awrt 6.87 or awrt 3.13

A1 Both $5+\sqrt{\frac{7}{2}}$ and $5-\sqrt{\frac{7}{2}}$ with no other solutions for part (b) apart from 5. Do not allow decimal equivalents. Don't allow complex solutions.