Question Number	Scheme	Marks
1 (a)	Attempts $u_3 = 3u_2 - 2u_1 \Rightarrow 4 = 3u_2 - 2\times 7 \Rightarrow u_2 = ...$	M1
	$\Rightarrow u_2 = 6$	A1
		(2)
(b)	Attempts $u_4 = 3u_3 - 2u_2 = 3\times 4 - 2\times "6" = (0)$	M1
	$\sum_{r=1}^{4}(u_r + 2r) = (7 + 2\times 1) + ("6" + 2\times 2) + (4 + 2\times 3) + ("0" + 2\times 4)$	dM1
	$= 37$	A1
		(3)
		Total 5

(a)

M1: Attempts to use the iteration formula to find u_2

Look for a correct NUMERICAL equation $4 = 3u_2 - 2\times 7$ o.e. leading to a value for u_2.

It can be implied by sight of $u_2 = 6$

There have been some longer methods seen.

E.g. $u_4 = 12 - 2u_2$ and $u_3 = 3u_2 - 14$ combined by using $12 - 2u_2 = 3(3u_2 - 14) - 2u_2$

The mark is not scored until a value of u_2 is found from a correct NUMERICAL equation

A1: $u_2 = 6$. You don't need to see the LHS but if they state $u_3 = 6$ it is A0

6 on its own without any incorrect working scores both marks.

Do not accept partially complete answers such as $\frac{18}{3}$

(b)

M1: Attempts to use the iteration formula to find u_4. This may be embedded within a sum

Look for $u_4 = 3u_3 - 2u_2 = 3\times 4 - 2\times "6"$. If (a) is correct, score for sight of $u_4 = 0$

dM1: Full attempt to find $\sum_{r=1}^{4}(u_r + 2r)$

Look for $\sum_{r=1}^{4} u_r + \sum_{r=1}^{4} 2r = (7 + (a) + 4 + (3\times 4 - 2\times "6")) + (2 + 4 + 6 + 8) =$

Alternatively, you may score for an attempt to find $(7 + 2) + ((a) + 4) + (4 + 6) + (3\times 4 - 2\times "6" + 8)$

A1: 37

Question Number	Scheme	Marks
2 (a)	Strip width = 1.5	B1
	$\frac{3}{4}\{4.16+2.28+2\times(2.91+a+1.73+1.37+1.43)\}=19.3\Rightarrow a=...$	M1
	a = awrt 2.21	A1
		(3)
(b)	$\int_{-4}^{5}(2\,\mathrm{f}(x)-3)\,\mathrm{d}x=2\times19.3-[3x]_{-4}^{5}$	M1
	=11.6	A1
		(2)
		Total 5

(a)

B1: Correct strip width. Allow for $h=1.5$. It is implied by sight of $\frac{1.5}{2}\{.....\}$ o.e.

Note that $h=-1.5$ is B0 unless recovered later in the working.

M1: 'Correct' attempt at the trapezium rule leading to a value for *a*.

Look for $\frac{...}{2}\{4.16+2.28+2\times(2.91+a+1.73+1.37+1.43)\}=19.3$ leading to a value for a

Condone a missing trailing bracket.

Condone $...\{4.16+2.28+2\times(2.91+a+1.73+1.37+1.43)\}=19.3$ leading to a value for a if $\frac{...}{2}$ not seen.

Award for the sum of separate trapezia leading to a value for *a*

You do not need to check their calculation but it must lead to a value for *a*

A1: *a* = awrt 2.21.

It is acceptable for the candidate to be working in fractions. Score for $\frac{331}{150}$ or $2\,\frac{31}{150}$.

ISW after a correct answer.

(b) Answers resulting from attempts at the trapezium rule score M0 A0

M1: Attempts to find $\int_{-4}^{5}(2\,\mathrm{f}(x)-3)\,\mathrm{d}x$ but condone $\int_{-4}^{5}(2\,\mathrm{f}(x)\pm3)\,\mathrm{d}x$

Look for $2\times19.3\pm[3x]_{-4}^{5}$, $2\times19.3\pm3\times9$ or $2\times19.3\pm27$ o.e.

If $2\times19.3-[3x]_{-4}^{5}$ is not seen, look for 2×19.3 combined with a ±15 **and** a ±12

So each of $2\times19.3-15+12$, $2\times19.3-((15)-(12))$, $2\times19.3-(15+12)$ and $2\times19.3+15-12$ are M1

Candidates who attempt $2\times'2.21'-[3x]_{-4}^{5}$ scores M0 as it uses the value of *a*

Candidates who attempt $2\times19.3-3$ scores M0 as no integration of the 3 was attempted (unless you see sight of a ±15 **and** a ±12 before the 3 was reached)

A1: 11.6 The answer with no incorrect working can score both marks