Question	Scheme	Marks
1	$1024+\ldots$	B1
	$\ldots+{}^{10}C_1\times\ldots x+{}^{10}C_2\times\ldots x^2+{}^{10}C_3\times\ldots x^3+\ldots$	M1
	$\ldots+10\times2^9\times\frac{3}{8}x+45\times2^8\times\left(\frac{3}{8}x\right)^2+120\times2^7\times\left(\frac{3}{8}x\right)^3$ Or two of $\ldots+1920x+1620x^2+810x^3$	A1
	$\ldots+1920x+1620x^2+810x^3$	A1
		(4)
		(4 marks)

Notes:

B1: Correct constant term of 1024 as an integer.

M1: Correct binomial coefficient multiplied by the correct powers of x for **at least 2 terms** in x, x^2 or x^3.

Allow e.g. ${}^{10}C_1$, ${}^{10}C_2$, ${}^{10}C_3$ or $\binom{10}{1}, \binom{10}{2}, \binom{10}{3}$ or evaluated coefficients and condone missing brackets e.g. $\frac{3}{8}x^2$ for $\left(\frac{3}{8}x\right)^2$ or $\frac{3}{8}x^3$ for $\left(\frac{3}{8}x\right)^3$

May take out a common factor of 2^{10} first, but again look for correct binomial coefficients multiplied by the correct powers of x for **at least 2 terms** in x, x^2 or x^3.

E.g. $\left(2+\frac{3}{8}x\right)^{10}=2^{10}\left(1+\frac{3}{16}x\right)^{10}=2^{10}\left(1+{}^{10}C_1\ldots x+{}^{10}C_2\ldots x^2+{}^{10}C_3\ldots x^3+\ldots\right)$

A1: Allow for a fully correct unsimplified expression (ignoring the constant term) with **evaluated binomial coefficients**, must be expanded if a common factor of 2^{10} is taken out first
OR two of the three terms in x, x^2 and x^3 correct and simplified.

E.g. $\ldots+10\times2^9\times\frac{3}{8}x+45\times2^8\times\left(\frac{3}{8}x\right)^2+120\times2^7\times\left(\frac{3}{8}x\right)^3$

Or $\ldots+10\times2^{10}\times\frac{3}{16}x+45\times2^{10}\times\left(\frac{3}{16}x\right)^2+120\times2^{10}\times\left(\frac{3}{16}x\right)^3$

The brackets must be present unless they are implied by subsequent work.

OR two of $\ldots+1920x+1620x^2+810x^3$. Allow terms to be "listed".

A1: Final three terms fully correct and simplified. Allow terms to be "listed".
Once a correct expansion (or list of terms) is seen then isw. E.g. some candidates think they have to list the coefficients separately but apply isw.
Ignore any extra terms if found.

For reference incorrect bracketing:

$$\ldots + 45 \times 2^8 \times \frac{3}{8}x^2 + 120 \times 2^7 \times \frac{3}{8}x^3 \text{ gives } \ldots + 4320x^2 + 5760x^3$$

And usually scores B1M1A0A0 if the 1024 is correct

Special case: Some candidates are just finding the coefficients 1024 + 1920 + 1620 + 810 and this scores B1 only if the x's never make an appearance.

Question	Scheme	Marks
2(a)	x 0.5 1 1.5 2 2.5 3 y 1.319 **1.075** 1.001 **1.041** 1.223 1.850	**B1** **B1**
		(2)
(b)	$h = 0.5$ seen or implied	**B1**
	Area $\approx \left\{\frac{0.5}{2}\right\} \times \left(1.319 + 2("1.075" + 1.001 + "1.041" + 1.223) + 1.850\right)$	**M1**
	$=$ awrt 2.96	**A1**
		(3)
(c)	$3 + \log_{10}\left(\sin(x)\right) = 4 - \left(1 - \log_{10}\left(\sin(x)\right)\right)$	**B1**
	$\int_{0.5}^{3} 3 + \log_{10}(\sin(x))\,\mathrm{d}x = \left[4x\right]_{0.5}^{3} - "2.96" = 12 - 2 - "2.96"$	**M1**
	= 7.04 follow through $10 -$ their 2.96	**A1ft**
		(3)
Alt (c)	$\int_{0.5}^{3} \log_{10}(\sin(x))\,\mathrm{d}x = \int_{0.5}^{3} 1\,\mathrm{d}x - "2.96" = 2.5 - "2.96"$	**B1**
	$\int_{0.5}^{3} 3 + \log_{10}(\sin(x))\,\mathrm{d}x = \left[3x\right]_{0.5}^{3} + \left(2.5 - "2.96"\right) = 9 - 1.5 + 2.5 - "2.96"$	**M1**
	= 7.04 follow through $10 -$ their 2.96	**A1ft**
		(3)
		(8 marks)

Notes:

(a)

B1: Either of awrt 1.075 or awrt.1.041 correct

B1: Both of awrt 1.075 and awrt.1.041 correct

Remember to check the body of the script for the values if the table has not been completed.

Note that the incorrect values of 2.758 and 2.457 come from the use of degrees.

(Which gives 4.51 in (b))

(b)

B1: Correct interval width seen or implied by working.

M1: Correct application of the trapezium rule. Must all be *y* values, and should be first + last + 2(sum of middle values), but if one middle value is omitted allow as a slip. A repeated value is M0. Follow through their values from (a). Allow obvious copying slips.

Note that $\left\{\frac{"0.5"}{2}\right\} \times 1.319 + 2("1.075" + 1.001 + "1.041" + 1.223) + 1.850$ scores M0 unless the missing brackets are implied by subsequent work.