| Question | Answer | Marks | Partial Marks |
|---|---|---|---|
| 11(b) | $ar = 1.5$ and $\frac{a}{1-r} = 8$ oe, soi | **B1** | |
| | Correctly eliminates $a$: $\frac{3}{2r} = 8(1-r)$ oe | **M1** | |
| | $16r^2 - 16r + 3 = 0$ oe | **A1** | |
| | Attempts to solve *their* 3-term quadratic in $r$ | **M1** | |
| | Correct solutions $r = \frac{3}{4}$ $r = \frac{1}{4}$ | **A1** | |
| | Alternative method<br>$ar = 1.5$ and $\frac{a}{1-r} = 8$ oe, soi | **(B1)** | |
| | Correctly eliminating $r$: $a\left(1 - \frac{a}{8}\right) = \frac{3}{2}$ oe | **(M1)** | |
| | $a^2 - 8a + 12 = 0$ | **(A1)** | |
| | Attempting to solve *their* 3-term quadratic in $a$ **and** use the values of $a$ to find $r$ | **(M1)** | |
| | Correct solutions $r = \frac{3}{4}$ $r = \frac{1}{4}$ | **(A1)** | |
| 12(a) | $\left[v = \frac{ds}{dt} =\right] 1 + 2\sin t$ soi | **B1** | |
| | Puts *their* $1 + 2\sin t = 0$ and solves for $t$ | **M1** | **FT** $a + b\sin t$ where $a$ and $b$ are non-zero |
| | $t = \frac{7\pi}{6}$ | **A1** | |
| | $s = \frac{7\pi}{6} + 2 - 2\cos\frac{7\pi}{6}$ | **M1** | **FT** *their* $t \neq 0$;<br>dep on previous **M1** |
| | 7.4[0] or 7.397[24...] (metres)<br>rot to 4 or more sig figs | **A1** | |
| 12(b) | $t = \frac{11\pi}{6}$ | **B1** | |
| 12(c) | 7.3972... + (7.3972... – 6.7123...) | **M1** | |
| | 8.08[20...] (metres) | **A1** | |

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