| Question Number | Scheme | Marks |
|---|---|---|
| **1.** | $\int\left(\frac{1}{2}x^3+\frac{3}{\sqrt{x}}-4\right)\mathrm{d}x=\frac{1}{2}\times\frac{x^4}{4}+3\times\frac{x^{\frac{1}{2}}}{\frac{1}{2}}-4x+c$ | M1, A1 |
| | $=\frac{1}{8}x^4+6x^{\frac{1}{2}}-4x+c$ | A1, A1<br>**(4 marks)** |

M1: For raising any correct index by 1. So, award for $x^3\rightarrow x^4$, $x^{-\frac{1}{2}}\rightarrow x^{\frac{1}{2}}$ or $-4\rightarrow -4x$ ( allowing $-4x^1$ )
The index must be processed and not left, for example, as $x^{3+1}$

A1: For **two** of $\frac{1}{2}\times\frac{x^4}{4}$ , $+3\times\frac{x^{\frac{1}{2}}}{\frac{1}{2}}$, $-4x$ (allowing $-4x^1$) correct simplified or correct unsimplified.

A1: For **two** of $\frac{1}{8}x^4$, $+6x^{\frac{1}{2}}$, $-4x$ correct and in simplest form.

Accept forms such as $0.125x^4$, $+6\sqrt{x}$ and $-4x^1$ and $+-4x^1$

A1: Fully correct, and simplified with $+c$ all on a single line. Accept simplified equivalents (see above)
Ignore any spurious notation such as $\int\frac{1}{8}x^4+6x^{\frac{1}{2}}-4x+c$ or $\frac{1}{8}x^4+6x^{\frac{1}{2}}-4x+c\,\mathrm{d}x$
If they go on, however, and multiply for example by 8 then it is A0 or integrate again it is A0.
They can do this in one line for full marks