Marked example 2

Paper 1 style · No calculator

2 6 marks SL 5.10 ●○○ Routine

Find the following integrals.

(a) $\int (5x-1)^3 \, \mathrm{d}x$ [2]

(b) $\int \mathrm{e}^{1-2x} \, \mathrm{d}x$ [2]

(c) $\int \frac{2}{4x+1} \, \mathrm{d}x$, for $x > -\frac{1}{4}$ [2]

MARKSCHEME (a)

$\frac{(5x-1)^4}{20} + c$

A1A1

Total 2 marks

Note A1 for $(5x-1)^4$, A1 for dividing by $4 \times 5 = 20$.

MARKSCHEME (b)

$-\frac{1}{2}\mathrm{e}^{1-2x} + c$

A1A1

Total 2 marks

Note A1 for e^{1-2x}, A1 for $-\frac{1}{2}$: the inside has gradient -2.

MARKSCHEME (c)

$\frac{1}{2}\ln(4x+1) + c$

A1A1

Total 2 marks

Note A1 for $\ln(4x+1)$, A1 for $\frac{2}{4} = \frac{1}{2}$.

Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software.
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