**5.** The table below shows corresponding values of $x$ and $y$ for $y = \log_3 2x$

The values of $y$ are given to 2 decimal places as appropriate.

| $x$ | 3 | 4.5 | 6 | 7.5 | 9 |
|---|---|---|---|---|---|
| $y$ | 1.63 | 2 | 2.26 | 2.46 | 2.63 |

(a) Using the trapezium rule with all the values of $y$ in the table, find an estimate for

$$\int_3^9 \log_3 2x \, dx$$

**(3)**

Using your answer to part (a) and making your method clear, estimate

(b) (i) $\int_3^9 \log_3 (2x)^{10} \, dx$

(ii) $\int_3^9 \log_3 18x \, dx$

**(3)**