

Rule 2: Standard integrals

integral of reciprocal.

$$* \int \frac{k}{x} dx = k \ln x + c$$

→ in Gr 11 we dealt with base 10 logs
 $\{ \log x = \log_{10} x \}$

→ Now, what happens if you get....
 $\log_e x$, where $e = 2.718...$
→ we then use $\ln$
 $\therefore \log_e x = \ln x$

Examples:

Determine the integrals, leave answers with (+) exponents and in surd form where needed.

1) $\int \frac{1}{x} dx$

*using rule 1:

*Rule 2:

$$2) \int \frac{3}{x} dx$$

$$3) \int \frac{dx}{2x}$$

$$4) \int \frac{5}{a} da$$

5) $3 \int \frac{3}{t} dt$

* So ... if we get :

- $\int \frac{(\text{anything})}{x} dx$

or

- $\int (\text{anything}) x^{-1} dx$

→ Use Rule 2 !!

ln