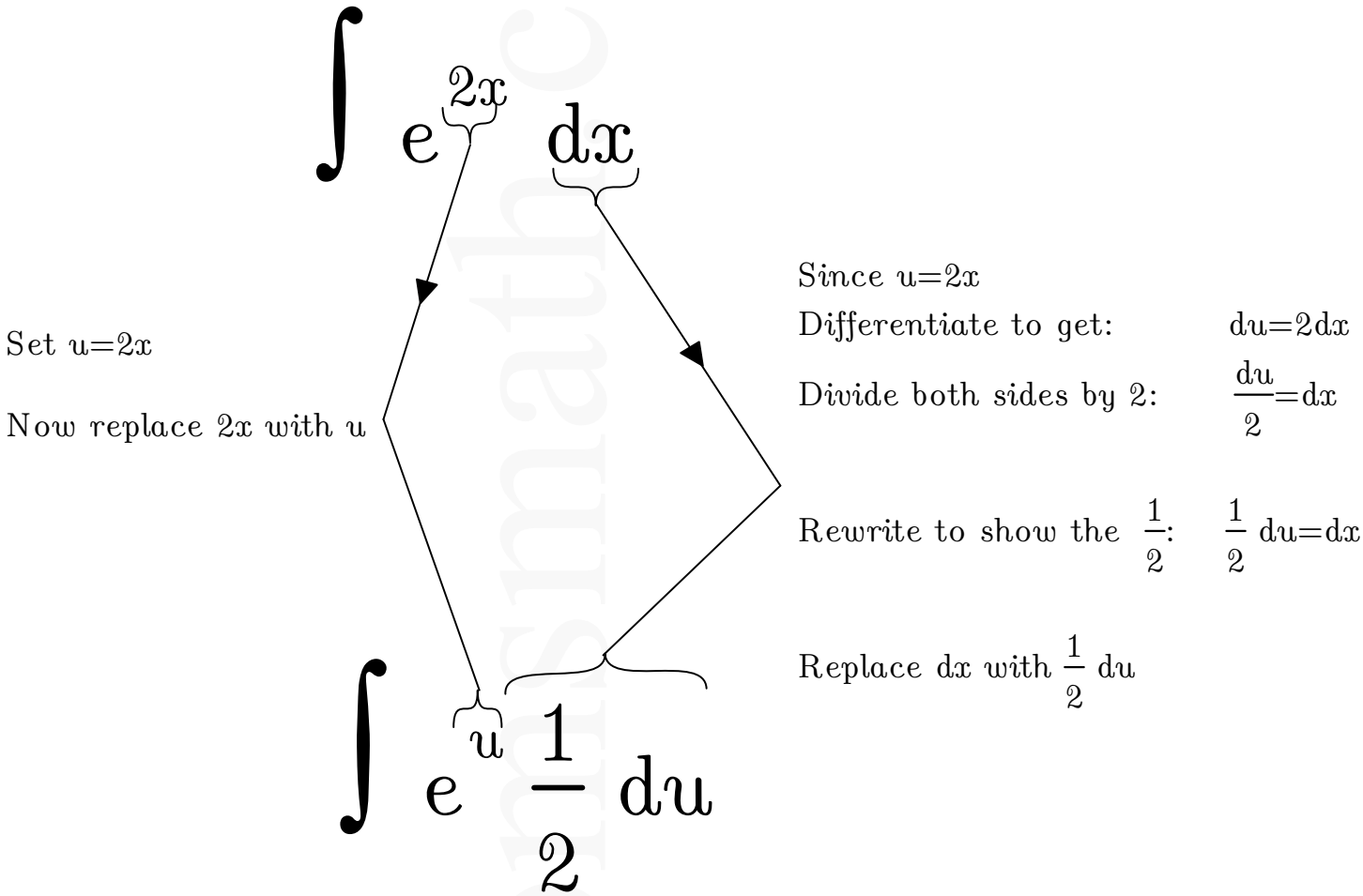
Find $\int e^{2x}\,dx$

1) This is found using u substitution. Proceed as shown along the arrows.



2) Now factor the $\frac{1}{2}$ out of the integral because it's constant.

$$\int \frac{1}{2} e^{u}\,du = \frac{1}{2}\int e^{u}\,du$$

3) Now antidifferentiate using the basic rule for the natural exponential function.

$$\frac{1}{2}\int e^{u}\,du = \frac{1}{2}e^{u} + C$$

4) Now replace u back with 2x to get the final form.

$$\int e^{2x}\,dx = \frac{1}{2}e^{2x} + C$$