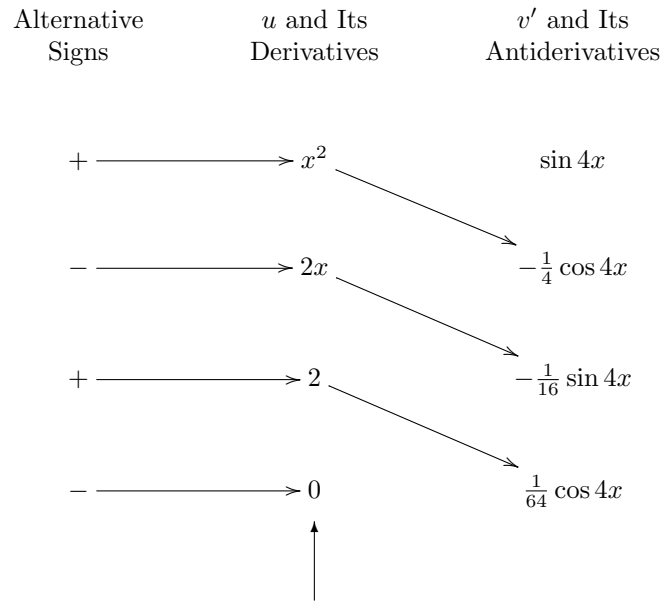
Ex: $\int x^2 \sin 4x \, dx$

Let $u = x^2$ and $dv = v' \, dx = \sin 4x dx$. Create a table consisting of three columns, as follows.



The solution is obtained by adding the *signed* products of the diagonal entries:

$$\int x^2 \sin 4x \, dx = -\frac{1}{4}x^2 \cos 4x + \frac{1}{8}x \sin 4x + \frac{1}{32} \cos 4x + C.$$