# Strategy guide: *Integration techniques*

| Technique | Basic idea | When to try it | Reason for using it |
|---|---|---|---|
| *Overall strategy* | *Rewrite the function in a new form, then integrate the new form.* | *When you can't do the integral "directly" (i.e. it's not in your table of integrals).* | *Transforming the function into something you can integrate.* |
| Substitution Rule | Find the "inside" and the "derivative of the inside". Substitute: "*inside*" = u and u' dx = du . | When the function has an "inside" and its derivative. e.g. If the inside is sin(x) there's also a cos(x) in the problem. | It's the reverse of the chain rule ("derivative of the outside times derivative of the inside"). |
| Integration by Parts | | | |
| Partial Fractions | | | |
| Trigonometric Substitution | | | |