$$\int \cos(ax+b)dx = \frac{\sin(ax+b)}{a} + C$$

$$\int \sin(ax+b)\cos^n(ax+b)dx = \frac{\cos^{n+1}(ax+b)}{n+1} + C$$

$$\int x^n \cos(ax^{n+1}+b)dx = \frac{1}{n+1}\sin(ax^{n+1}+b) + C$$

Tips:

1. Integrating cosine gives a sin graph
2. When integrating trig, think of double angle formulas!
   - $\int 2\sin x \cos x dx = \int \sin 2x dx$
   - $\int \cos(2x)dx = \cos^2 x - \sin^2 x$
   - $\int \cos(2x)dx = 1 - 2\sin^2 x$
   - $\int \cos(2x)dx = 2\cos^2 x - 1$
3. Remember trig identities
   $\sin^2\theta + \cos^2\theta = 1$
   $\tan^2\theta + 1 = \sec^2\theta$
   $1 + \cot^2\theta = \csc^2\theta$
4. Change $\int \tan x \rightarrow \int \sin x/\cos x = -\ln(\cos x) + C$
   Change $\int \cot x \rightarrow \int \cos x/\sin x = \ln(\sin x) + C$

11.5 WORKED EXAMPLE

$\int \sin^3 x dx$