USING TRIGONOMETRIC IDENTITIES

The following are identities that you should know:

$sin(A \pm B)$	=		
$cos(A \pm B)$	=		
$tan(A \pm B)$	=		
sin 2A	=		
cos 2A	=		
cos 2A	=		
cos 2A	=		
tan 2A	=		
sec ² A	=		
cosec ² A	=		
•			

We can use these identities to transform an expression that *cannot* be integrated into one that *can* be integrated.

These first examples focus on manipulation of the identities rather than integration.

Examples

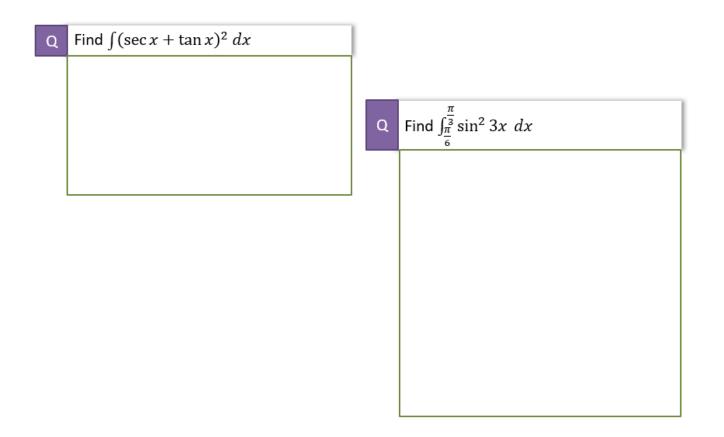
- 1) sin 4x =
- 2) $2 \sin 3x \cos 3x =$
- 3) cos 5x =
- 4) $4\cos^2 3x 2 =$

SKILL #3: Integrating using Trig Identities

Some expressions, such as $\sin^2 x$ and $\sin x \cos x$ can't be integrated directly, but we can use one of our trig identities to replace it with an expression we can easily integrate.

Q Find $\int \sin^2 x dx$	Q Find $\int \sin 3x \cos 3x dx$
Q Find $\int \cos^2 x dx$	Q Find $\int \tan^2 x dx$

Check Your Understanding



Further examples

Show that

$$\int_{\frac{\pi}{12}}^{\frac{\pi}{8}} \sin^2 x \, dx = \frac{\pi}{48} + \frac{1 - \sqrt{2}}{8}$$

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