

7.2: Trig Integrals7.2  
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Ex1:  $\int \sin^5(x) \cos^2(x) dx$

I want only 1 sine or 1 cosine.

Ex2:  $\int_{-\pi/2}^{\pi/2} \cos^2(x) dx$

$$\begin{array}{l} \text{Half} \\ \text{Angle} \\ \text{Red} \end{array} \quad \sin^2 x = \frac{1 - \cos 2x}{2}$$

$$\cos^2 x = \frac{1 + \cos 2x}{2}$$

Ex3:  $\int \sin^3(x) dx$  (in groups).

Ex4: set-up  $\int \sin^4(x) dx$ .

Ex5:  $\int \tan^3(x) dx$   
 $= \int \tan x (\sec^2 x - 1) dx$

Strategy  
2 separate integrals.  
sub  $u_1 = \tan x$   
 $u_2 = \cos x$ .

Ex6:  $\int \sec x dx$   
 $= \int \frac{\sec x (\sec x + \tan x)}{\sec x + \tan x} dx$

Let  $u = \sec x + \tan x$ .

Ex7:  $\int \sec^3 x dx$  use parts & solve for  $\int \sec^2 x dx$ .  
Strategy  
 $u = \sec x \quad dv = \sec^2 x$