Recall: Pythagorean Identities

$$\sin^2 x + \cos^2 x = 1 \qquad \Rightarrow \sin^2 x = 1 - \cos^2 x \qquad \Rightarrow \cos^2 x = 1 - \sin^2 x$$

$$\sec^2 x = 1 + \tan^2 x \qquad \Rightarrow \tan^2 x = \sec^2 x - 1$$

Double Angle (Reduction) Formulas

$$\sin 2x = 2\sin x \cos x$$

$$\cos 2x = 2\cos^2 x - 1 \qquad \Rightarrow \cos^2 x = \frac{1}{2}(\cos 2x + 1)$$

$$\cos 2x = 1 - 2\sin^2 x \qquad \Rightarrow \sin^2 x = \frac{1}{2}(1 - \cos 2x)$$

Do: $\int \sin^3 x \, dx$

recall: $\int \frac{dx}{x^2\sqrt{1-x^2}}$

ex. $\int \frac{dx}{x^2\sqrt{4-x^2}}$

recall: $\int \sin^2 x \, dx$

ex. $\int \sin^4 x \cos^4 x \, dx$

recall: $\int \tan x \, dx$

ex. $\int \sec x \, dx$

ex. $\int \tan^2 x \, dx$

ex. $\int \tan^3 x \, dx$

ex. $\int \sec^3 x \, dx$