Recall: Pythagorean Identities

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

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

Recall: Double Angle (Reduction) Formulas

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

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

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

Do: $\int e^{7x} dx$ Do: $\int \cos 7x \, dx$ Do: $\int \frac{1}{7x-5} dx$

then

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

then

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

Guidelines for Trigonometric Substitutions – look at format under the radical:

$\sqrt{a^2 - x^2}$

$\sqrt{a^2 + x^2}$

$\sqrt{x^2 - a^2}$

recall: $\int \frac{dx}{x^2\sqrt{4-x^2}}$

ex. $\int \frac{dx}{\sqrt{9+x^2}}$

ex. $\int \frac{x^2}{\sqrt{25-x^2}}\,dx$

ex. $\int \frac{dx}{x^2\sqrt{x^2-25}}$

Do: $\int \sqrt{16 - x^2}\ dx$