1. $\int x\sqrt{x^4-9}\,dx$ $\qquad u=x^2 \quad du=2xdx$

$=\int \sqrt{u^2-9}\,du$

$=\frac{1}{2}\left[\frac{u}{2}\sqrt{u^2-3^2}-\frac{3^2}{2}\ln\left|u^2+\sqrt{u^2-3^2}\right|\right]+C_1$ (#39 a=3)

$=\frac{x^2\sqrt{x^4-9}-9\ln\left(u^2+\sqrt{u^2-9}\right)}{4}+C$

2. $\int_2^3 \frac{dx}{4x^2\sqrt{4x^2-7}}$ $\qquad u=2x \quad \frac{du}{2}=dx \quad u(2)=4 \quad u(3)=6$

$=\frac{1}{2}\int_4^6 \frac{du}{u^2\sqrt{u^2-7}}$

$=\left[\frac{\sqrt{u^2-7}}{(2)7u}\right]_4^6$ (#45 $a^2=7$)

$=\frac{\sqrt{29}}{84}-\frac{3}{56}=\frac{2\sqrt{29}-9}{168}$

3. $\int \sec^4 x dx$

$=\frac{1}{3}\tan x\sec^2 x+\frac{2}{3}\int \sec^2 x dx$ (#77 n=4)

$=\frac{1}{3}\tan x\sec^2 x+\frac{2}{3}\tan x+C$

4. $\int e^t \sin(5t+7)\,dt$

$=e^{-7/5}\int e^{t+7/5}\sin\left[5\left(t+\frac{7}{5}\right)\right]dt$ $\qquad u=t+\frac{7}{5} \quad du=dt \quad a=1 \quad b=5$ #98

$=\left(e^{-7/5}\right)\frac{e^{t+7/5}}{1^2+5^2}\left[\sin\left[5\left(t+\frac{7}{5}\right)\right]-5\cos\left[5\left(t+\frac{7}{5}\right)\right]\right]+C$

$=\frac{e^t}{26}\left[\sin(5t+7)-5\cos(5t+7)\right]+C$