e) $\int\left(\pi-\frac{1}{2x}+e^{-2x}\right)dx = \pi x-\frac{1}{2}\ln|x|-\frac{1}{2}e^{-2x}+c$

f) $\int \sin^4 x \underbrace{\cos^2 x}_{1-\sin^2 x} \underbrace{\cos x\,dx}_{d(\sin x)} = \frac{\sin^5 x}{5}-\frac{\sin^7 x}{7}+c$

g) $\int \underbrace{\tan^2 x}_{\sec^2 x-1} . \underbrace{\tan x \sec x\,dx}_{d(\sec x)} = \frac{\sec^3 x}{3}-\sec x+c$

h) $\int \frac{dx}{\sqrt{(x-2)^2-12}} = \ln\left|x-2+\sqrt{(x-2)^2-12}\right|+c$

ı) $\int \frac{x+3}{4x^2+4x+3}dx = \frac{1}{8}\int \frac{8x+4+20}{4x^2+4x+3}dx = \frac{1}{8}\int\frac{8x+4}{4x^2+4x+3}dx+\frac{20}{8}\int\frac{dx}{(2x+1)^2+2}$

$= \frac{1}{8}\ln|4x^2+4x+3|+\frac{20}{8}\cdot\frac{1}{2}\cdot\frac{1}{\sqrt{2}}\arctan\frac{x}{\sqrt{2}}+c$

i) $\int x^3(1+2x^2)^{-3/2}dx = \frac{1}{2}\int\left(\frac{t^2-1}{2}\right)t^{-3}t\,dt$

$\ulcorner\ r=3,\ p=2,\ q=-3/2$

$\frac{r+1}{p}=2\in\mathbb{Z}\ ,\ 1+2x^2=t^2$

$x\,dx=\frac{1}{2}t\,dt\ \lrcorner$

$= \frac{1}{4}\int(1-t^{-2})dt = \frac{1}{4}\left(t+\frac{1}{t}\right)+c$

$= \frac{1}{4}\left(\sqrt{1+2x^2}+\frac{1}{\sqrt{1+2x^2}}\right)+c$

J) $\int\frac{dx}{(x+1)\sqrt{x^2+1}} = \int t\,\frac{-1/t^2\,dt}{\sqrt{\left(\frac{1}{t}-1\right)^2+1}} = -\int\frac{dt}{t\sqrt{\frac{1}{t^2}-\frac{2}{t}+2}}$

$\ulcorner\ \frac{1}{x+1}=t\ ,\ \frac{1}{t}-1=x$

$dx=-\frac{1}{t^2}dt\ \lrcorner$

$= -\int\frac{dt}{\sqrt{1-2t+2t^2}} = -\frac{1}{\sqrt{2}}\int\frac{dt}{\sqrt{\left(t-\frac{1}{2}\right)^2+\frac{1}{4}}}$

$= -\frac{1}{2}\ln\left|\left(t-\frac{1}{2}\right)+\sqrt{\left(t-\frac{1}{2}\right)^2+\frac{1}{4}}\right|+c$

$= -\frac{1}{2}\ln\left|\frac{1}{x+1}-\frac{1}{2}+\sqrt{\left(\frac{1}{x+1}-\frac{1}{2}\right)^2+\frac{1}{4}}\right|+c$