Calculus

What Integration Technique Should I Use?

(Q1.) $\int \frac{\ln x}{x^3}\, dx$

(Q2.) $\int \sec^4 x\, dx$

(Q3.) $\int \frac{2x+3}{x^2-5x+4}\, dx$

(Q4.) $\int x^2 \tan(x^3)\, dx$

(Q5.) $\int \frac{1}{(1+x^2)^{\frac{5}{2}}}\, dx$

(Q6.) $\int e^{\sqrt{x}}\, dx$

(Q7.) $\int \sin^2 x\, dx$

(Q8.) $\int \frac{1}{\sqrt{x+1}-\sqrt{x}}\, dx$

(Q9.) $\int \frac{e^x}{\sec x}\, dx$

(Q10.) $\int \frac{1}{1+\cos x}\, dx$

(Q11.) $\int \frac{x-4}{x^4-1}\, dx$

(Q12.) $\int \frac{x^2}{\sqrt{1-x^2}}\, dx$

Optional Challenges:

$$\int \frac{1}{\sin^6 x+\cos^6 x}\, dx$$

Reference: Sect 7.5, Single Variable Calculus by James Stewart, 8th edition