

$$28. \quad u = \sqrt{x}, du = \frac{1}{2\sqrt{x}} dx; \int 2 \sec u du = 2 \ln |\sec u + \tan u| + C = 2 \ln |\sec \sqrt{x} + \tan \sqrt{x}| + C$$

$$29. \quad u = \tan x, \int u^2 du = \frac{1}{3} \tan^3 x + C$$

$$30. \quad \int \tan^5 x (1 + \tan^2 x) \sec^2 x dx = \int (\tan^5 x + \tan^7 x) \sec^2 x dx = \frac{1}{6} \tan^6 x + \frac{1}{8} \tan^8 x + C$$

$$31. \quad \int \tan 4x (1 + \tan^2 4x) \sec^2 4x dx = \int (\tan 4x + \tan^3 4x) \sec^2 4x dx = \frac{1}{8} \tan^2 4x + \frac{1}{16} \tan^4 4x + C$$

$$32. \quad \int \tan^4 \theta (1 + \tan^2 \theta) \sec^2 \theta d\theta = \frac{1}{5} \tan^5 \theta + \frac{1}{7} \tan^7 \theta + C$$

$$33. \quad \int \sec^4 x (\sec^2 x - 1) \sec x \tan x dx = \int (\sec^6 x - \sec^4 x) \sec x \tan x dx = \frac{1}{7} \sec^7 x - \frac{1}{5} \sec^5 x + C$$

$$34. \quad \int (\sec^2 \theta - 1)^2 \sec \theta \tan \theta d\theta = \int (\sec^4 \theta - 2 \sec^2 \theta + 1) \sec \theta \tan \theta d\theta = \frac{1}{5} \sec^5 \theta - \frac{2}{3} \sec^3 \theta + \sec \theta + C$$

$$\begin{aligned} 35. \quad \int (\sec^2 x - 1)^2 \sec x dx &= \int (\sec^5 x - 2 \sec^3 x + \sec x) dx = \int \sec^5 x dx - 2 \int \sec^3 x dx + \int \sec x dx \\ &= \frac{1}{4} \sec^3 x \tan x + \frac{3}{4} \int \sec^3 x dx - 2 \int \sec^3 x dx + \ln |\sec x + \tan x| \\ &= \frac{1}{4} \sec^3 x \tan x - \frac{5}{4} \left[\frac{1}{2} \sec x \tan x + \frac{1}{2} \ln |\sec x + \tan x| \right] + \ln |\sec x + \tan x| + C \\ &= \frac{1}{4} \sec^3 x \tan x - \frac{5}{8} \sec x \tan x + \frac{3}{8} \ln |\sec x + \tan x| + C \end{aligned}$$

$$\begin{aligned} 36. \quad \int [\sec^2 x - 1] \sec^3 x dx &= \int [\sec^5 x - \sec^3 x] dx \\ &= \left(\frac{1}{4} \sec^3 x \tan x + \frac{3}{4} \int \sec^3 x dx \right) - \int \sec^3 x dx \quad (\text{equation (20)}) \\ &= \frac{1}{4} \sec^3 x \tan x - \frac{1}{4} \int \sec^3 x dx \\ &= \frac{1}{4} \sec^3 x \tan x - \frac{1}{8} \sec x \tan x - \frac{1}{8} \ln |\sec x + \tan x| + C \quad (\text{equation (20), (22)}) \end{aligned}$$

$$37. \quad \int \sec^2 t (\sec t \tan t) dt = \frac{1}{3} \sec^3 t + C \qquad 38. \quad \int \sec^4 x (\sec x \tan x) dx = \frac{1}{5} \sec^5 x + C$$

$$39. \quad \int \sec^4 x dx = \int (1 + \tan^2 x) \sec^2 x dx = \int (\sec^2 x + \tan^2 x \sec^2 x) dx = \tan x + \frac{1}{3} \tan^3 x + C$$