Indefinite Integrals

Everywhere in the table below, I is an interval included in the real number set R and C is the set of all constant functions defined on I with real values.

1	$f: R \to R$,	$f(x) = x^n;\ n \in N$	$\int x^n dx = \frac{x^{n+1}}{n+1} + C$	
2	$f: I \to R; I \subset (0,\infty)$,	$f(x) = x^a;\ a \in R \setminus \{-1\}$	$\int x^a dx = \frac{x^{a+1}}{a+1} + C$;	$\int dx = x + C$
3	$f: R \to R$,	$f(x) = a^x;\ a \in R_+ \setminus \{1,0\}$	$\int a^x dx = \frac{a^x}{\ln a} + C$;	$\int e^x dx = e^x + C$
4	$f: I \to R; I \subset R \setminus \{0\}$,	$f(x) = \frac{1}{x}$	$\int \frac{1}{x} dx = \ln\lvert x\rvert + C$	
5	$f: R \to R$,	$f(x) = \sin x$	$\int \sin x dx = -\cos x + C$	
6	$f: R \to R$,	$f(x) = \cos x$	$\int \cos x dx = \sin x + C$	
7	$f: I \to R; I \subset R \setminus \left\{ (2k+1)\frac{p}{2} \middle\vert k \in Z \right\}$			
	$f(x) = \sec^2 x$		$\int \sec^2 x dx = \tan x + C$	
8	$f: I \to R; I \subset R \setminus \{kp \mid k \in Z\}$,			
	$f(x) = \csc^2 x$		$\int \csc^2 x dx = -\cot x + C$	
9	$f: I \to R; I \subset R \setminus \left\{ (2k+1)\frac{p}{2} \middle\vert k \in Z \right\}$			
	$f(x) = \sec x \tan x$		$\int \sec x \tan x dx = \sec x + C$	
10	$f: I \to R; I \subset R \setminus \{kp \mid k \in Z\}$,			
	$f(x) = \csc x \cot x$		$\int \csc x \cot x dx = -\csc x + C$	
11	$f: I \to R; I \subset (-a,a), a > 0$			
	$f(x) = \frac{1}{\sqrt{a^2 - x^2}}$		$\int \frac{1}{\sqrt{a^2 - x^2}} dx = \sin^{-1}\frac{x}{a} + C$;	$\int \frac{1}{\sqrt{1 - x^2}} dx = \sin^{-1} x + C$
12	$f: R \to R$			
	$f(x) = \frac{1}{x^2 + a^2};\ a \neq 0$		$\int \frac{1}{x^2 + a^2} dx = \frac{1}{a}\tan^{-1}\frac{x}{a} + C$;	$\int \frac{1}{x^2 + 1} dx = \tan^{-1} x + C$
13	$f: I \to R; I \subset (-\infty,-1) \cup (1,\infty)$			
	$f(x) = \frac{1}{\lvert x\rvert\sqrt{x^2 - 1}}$		$\int \frac{1}{\lvert x\rvert\sqrt{x^2 - 1}} dx = \sec^{-1} x + C$	
14	$f: I \to R; I \subset R \setminus \left\{ (2k+1)\frac{p}{2} \middle\vert k \in Z \right\}$	$f(x) = \tan x$	$\int \tan x dx = -\ln\lvert\cos x\rvert + C$	
15	$f: I \to R; I \subset R \setminus \{kp \mid k \in Z\}$	$f(x) = \cot x$	$\int \cot x dx = \ln\lvert\sin x\rvert + C$	
16	$f: I \to R; I \subset R \setminus \left\{ (2k+1)\frac{p}{2} \middle\vert k \in Z \right\}$	$f(x) = \sec x$	$\int \sec x dx = \ln\lvert\sec x + \tan x\rvert + C$	
17	$f: I \to R; I \subset R \setminus \{kp \mid k \in Z\}$	$f(x) = \csc x$	$\int \csc x dx = -\ln\lvert\csc x + \cot x\rvert + C$	