Derivatives Review

Name: Key
Per.: ____

① $\frac{d}{dx}[\pi] = 0$

② $\frac{d}{dx}[f(x) \pm g(x)] = f'(x) \pm g'(x)$

③ $\frac{d}{dx}[f(x)g(x)] = f'(x)g(x) + f(x)g'(x)$

④ $\frac{d}{dx}\left[\frac{f(x)}{g(x)}\right] = \frac{g(x)f'(x) - f(x)g'(x)}{(g(x))^2}$

⑤ $\frac{d}{dx}[x^n] = nx^{n-1}$

⑥ $\frac{d}{dx}[f(g(x))] = f'(g(x))\,g'(x)$

⑦ $\frac{d}{dx}[\ln x] = \frac{1}{x}$

⑧ $\frac{d}{dx}[e^x] = e^x$

⑨ $\frac{d}{dx}[\log_a x] = \frac{1}{x \ln a}$

⑩ $\frac{d}{dx}[a^x] = a^x \ln a$

⑪ $\frac{d}{dx}[\sin x] = \cos x$

⑫ $\frac{d}{dx}[\cos x] = -\sin x$

⑬ $\frac{d}{dx}[\tan x] = \sec^2 x$

⑭ $\frac{d}{dx}[\cot x] = -\csc^2 x$

⑮ $\frac{d}{dx}[\sec x] = \sec x \tan x$

⑯ $\frac{d}{dx}[\csc x] = -\csc x \cot x$

⑰ $\frac{d}{dx}[\arcsin x] = \frac{1}{\sqrt{1-x^2}}$

⑱ $\frac{d}{dx}[\arccos x] = \frac{-1}{\sqrt{1-x^2}}$

⑲ $\frac{d}{dx}[\arctan x] = \frac{1}{1+x^2}$

⑳ $\frac{d}{dx}[\operatorname{arccot} x] = \frac{-1}{1+x^2}$

㉑ $\frac{d}{dx}[\operatorname{arcsec} x] = \frac{1}{x\sqrt{x^2-1}}$

㉒ $\frac{d}{dx}[\operatorname{arccsc} x] = \frac{-1}{x\sqrt{x^2-1}}$

Integrals Review

Name: Key
Per.: ____

① $\int \pi\,dx = \pi x + C$

② $\int x\,dx = \frac{1}{2}x^2 + C$

③ $\int dx = x + C$

④ $\int x^n\,dx = \frac{1}{n+1}x^{n+1} + C$

⑤ $\int f(x) + g(x)\,dx = \int f(x)\,dx + \int g(x)\,dx$

⑥ $\int a f(x)\,dx = a\int f(x)\,dx$

⑦ $\int \frac{1}{x}\,dx = \ln|x| + C$

⑧ $\int e^x\,dx = e^x + C$

⑨ $\int a^x\,dx = \frac{a^x}{\ln a} + C$

⑩ $\int \sin x\,dx = -\cos x + C$

⑪ $\int \cos x\,dx = \sin x + C$

⑫ $\int \tan x\,dx = -\ln|\cos x| + C$
$= \ln|\sec x| + C$

⑬ $\int \cot x\,dx = \ln|\sin x| + C$
$= -\ln|\csc x| + C$

⑭ $\int \sec x\,dx =$
$\ln|\sec x + \tan x| + C$

⑮ $\int \csc x\,dx =$
$-\ln|\csc x + \cot x| + C$
$\ln|\csc x - \cot x| + C$

⑯ $\int \underline{\sec^2 x}\,dx = \tan x + C$

⑰ $\int \underline{\csc^2 x}\,dx = -\cot x + C$

⑱ $\int \underline{\sec x \tan x}\,dx = \sec x + C$

⑲ $\int \underline{\csc x \cot x}\,dx = -\csc x + C$

⑳ $\int \frac{1}{\sqrt{a^2 - x^2}}\,dx = \arcsin\frac{x}{a} + C$

㉑ $\int \frac{1}{a^2 + x^2}\,dx = \frac{1}{a}\arctan\frac{x}{a} + C$

㉒ $\int \frac{1}{x\sqrt{x^2 - a^2}}\,dx = \frac{1}{a}\operatorname{arcsec}\frac{x}{a} + C$