1、若$F(x)$的原函数为$\sin x$，则$\int dF(x)=$_____.

2. $\int \frac{\sin 2x}{1+\sin^2 x}dx=$（ C ）.

A. $\ln(1+\sin 2x)+C$　　B. $\ln(1+\cos 2x)+C$

C. $\ln(1+\sin^2 x)+C$　　D. 以上答案都不对

3. $\int \frac{2x+5}{x^2+4x+13}dx$

4. $\int \frac{1}{(1+e^{-x})}dx$

5、计算：$\int \operatorname{arccot}\sqrt{x}dx$

6. 求$\int x^2\cos x dx$.

7. $\int \sin^3 t\cdot\cos t\cdot dt$

8. $\int \sin^3 t\cdot\cos^2 t\cdot dt$

9. 求$\int \frac{dx}{\sqrt{(x^2+1)^3}}$. 解：令$x=\tan u,\quad dx=\sec^2 u du$

$$\int \frac{dx}{\sqrt{(x^2+1)^3}}=\int \frac{\sec^2 u du}{\sec^3 u}=\int \frac{1}{\sec u}du=\int \cos u du=\sin u+C=\frac{x}{\sqrt{x^2+1}}+C$$

10. 求$\int \frac{1}{x\sqrt{x^2-1}}dx$.

解：　设$x=\sec u,\quad dx=\sec u\tan u du$

$$\text{原式}=\int \frac{1}{\sec u\tan u}\sec u\tan u du=\int du=u+C=\arccos\frac{1}{x}+C$$

11. $\int \frac{1}{\sin^2 x\cos^2 x}dx=\int \frac{\sin^2 x+\cos^2 x}{\sin^2 x\cos^2 x}dx=\int(\sec^2 x+\csc^2 x)dx=\tan x-\cot x+c$

12. $\int \frac{x^2+x-1}{(x^2-1)^2}dx$