

# 不定积分竞赛题

(每小题 5 分, 共 100 分, 考试时间 120 分钟)

姓名\_\_\_\_\_成绩\_\_\_\_\_

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

2.  $\int \frac{1 + \sin^2 x}{1 - \cos 2x} dx$

3.  $\int \frac{1 + 2\cos x}{\sin^2 x} dx$

4.  $\int \frac{3x + 2\arcsin x}{\sqrt{1 - x^2}} dx$

5.  $\int \frac{x^2 \arctan x - 3x + 2}{1 + x^2} dx$

6.  $\int \frac{3dx}{(x + 2)\sqrt{x + 3}}$

7.  $\int \frac{\sin^2 x \cos x}{1 + 4\sin^2 x} dx$

$$8. \int \frac{x^3}{\sqrt{4-x^2}} dx$$

$$9. \int \frac{\ln \cos x}{\cos^2 x} dx$$

$$10. \int \frac{1+x+2\cos x}{\sin^2 x} dx$$

$$11. \int (x+1) \log_2 x dx$$

$$12. \int (3x+1) \sin 2x dx$$

$$13. \int x^3 \arctan x^2 dx$$

$$14. \int e^x \arcsin(3e^x - 2) dx$$

$$15. \int \frac{xe^x}{(1+e^x)^2} dx$$

$$18. \int \frac{x^2 + 5x + 2}{x^2 + 4} dx$$

$$16. \int e^{\sqrt[3]{4x+1}} dx$$

$$19. \int xe^{\sqrt{1-x^2}} dx$$

$$17. \int \frac{x+1}{x^2-2x+5} dx$$

$$20. \text{ 已知 } \int e^x f(x) dx = xe^x + C, \text{ 求 } \int xf'(2x) dx$$