

MATHEMATICS 201-203-RE

Integral Calculus

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Strategy for Integration

State the method of integration used to evaluate the following integrals then evaluate it.

1. $\int \cos^3 3x \, dx$

2. $\int \frac{1}{\sqrt{4 + \sqrt{x+1}}} \, dx$

3. $\int \frac{1}{x^3(1+x)} \, dx$

4. $\int x^2 e^{5x} \, dx$

5. $\int e^x \sin 2x \, dx$

6. $\int \csc^4(3-2x) \, dx$

7. $\int \frac{x^3 - 2}{x^2 + 2x + 26} \, dx$

8. $\int \frac{e^{2x}}{\sqrt[4]{e^x + 2}} \, dx$

9. $\int \sin^{\frac{2}{3}} x \cos^3 x \, dx$

10. $\int \ln(x^2 + 16) \, dx$

11. $\int \frac{2x - 17}{x^3 + 8x^2 + 17x} \, dx$

12. $\int \frac{x+1}{x\sqrt{x+4}} \, dx$

13. $\int \sin^2(1+x) \, dx$

14. $\int (\sec x - \tan x)^2 \, dx$

15. $\int \frac{x^4 + 4x^3 + 6x^2 + 4x - 3}{x^4 - 1} \, dx$

16. $\int x \arctan 2x \, dx$

17. $\int \frac{\cos x}{\sin^4 x} \, dx$

18. $\int x^3 \cos x \, dx$

19. $\int \sin 8x \sin 3x \, dx$

20.
$$\int \frac{3x^2 - x + 1}{(x^2 - x)(x + 1)} dx$$

21.
$$\int \tan^4(2x + 1) dx$$

22.
$$\int \frac{x^2 - 4x - 4}{(x - 2)(x^2 + 4)} dx$$

23.
$$\int \frac{x}{\sqrt[4]{1 + 2x}} dx$$

24.
$$\int \tan^5 x dx$$

25.
$$\int \frac{x^5}{(x^2 + 1)^2} dx$$

26.
$$\int \frac{1}{x + \sqrt[3]{x}} dx$$

27.
$$\int \frac{x}{(x - 1)^{\frac{3}{2}}} dx$$

28.
$$\int \frac{x - 2}{\sqrt{x^2 - 4x + 5}} dx$$

29.
$$\int \frac{4x + 5}{x^2 + 3x + 9} dx$$

30.
$$\int \frac{x^2 + 1}{(x + 2)(x^2 + x + 1)} dx$$