

РАСЧЕТНО-ГРАФИЧЕСКАЯ РАБОТА 2.1

1. Найти неопределенный интеграл.

$$1. \int \frac{x^2 + x}{\sqrt{x}} dx. \quad 2. \int \frac{dx}{2 + 5x^2}. \quad 3. \int \left(e^{-2x} + \frac{1}{x} + \frac{5}{x^2} \right) dx.$$

$$4. \int \frac{x^2 + 5x - 3}{\sqrt{x}} dx. \quad 5. \int \frac{x^4 + 3x^2 + 1}{x^2 + 1} dx. \quad 6. \int \frac{x^2 + 4}{x^2 - 4} dx.$$

$$7. \int \frac{x^2 + 1}{x^2 - 1} dx. \quad 8. \int \frac{x^{\frac{3}{2}} - 8}{x + 2\sqrt{x} + 4} dx. \quad 9. \int \left(\frac{x^2 - 3x + 1}{x - 1} + \sqrt{x} \right) dx.$$

$$10. \int \frac{dx}{\sqrt{5 + 4x^2}}. \quad 11. \int \frac{dx}{6x^2 + 7}. \quad 12. \int \left(3^{2x} - \frac{5}{x^2 - 4} \right) dx.$$

$$13. \int \frac{dx}{2x^2 - 1}. \quad 14. \int \frac{dx}{\sqrt{4x^2 + 3}}. \quad 15. \int \frac{x^2 + 5x - 1}{\sqrt{x}} dx.$$

$$16. \int \frac{dx}{3 - 2x^2}. \quad 17. \int \frac{dx}{5 + 3x^2}. \quad 18. \int \left(\frac{1}{\sqrt[3]{x}} + \frac{5}{\sqrt{4x^2 - 3}} \right) dx.$$

$$19. \int \frac{dx}{4 + 3x^2}. \quad 20. \int \frac{dx}{2 - 7x^2}. \quad 21. \int \left(e^{2x} + \frac{3}{x^2 + 16} \right) dx.$$

$$22. \int \frac{dx}{\sqrt{4 - 9x^2}}. \quad 23. \int \frac{x^2 + 4}{x^2 + 7} dx. \quad 24. \int e^{2x} \left(1 - \frac{e^{-2x}}{x^2 - 1} \right) dx.$$

$$25. \int \frac{x^2}{3x^2 - 1} dx. \quad 26. \int \frac{x + \sqrt{x}}{1 + \sqrt{x}} dx. \quad 27. \int \frac{x^4 + 3x^2 - 4}{x^2 + 3} dx.$$

$$28. \int \frac{dx}{\sqrt{1 - 4x^2}}. \quad 29. \int \frac{x - \sqrt{x}}{1 - \sqrt{x}} dx. \quad 30. \int \left(\frac{2}{x} + \frac{3}{x^2} - \frac{4}{x^4} \right) dx.$$

2. Найти неопределенный интеграл.

1. $\int \sin^2 x \, dx.$ 2. $\int \frac{\cos 2x}{\cos x - \sin x} dx.$ 3. $\int \left(1 - 2\cos^2 \frac{x}{2}\right) dx.$
4. $\int \frac{dx}{x\sqrt{4x^{-2} + 1}}.$ 5. $\int \frac{(x^2 - 1)^2}{x^2 - 2} dx.$ 6. $\int \left(e^{2-x} - \frac{1}{5x^2 - 1}\right) dx.$
7. $\int \frac{dx}{3 + (\sqrt{5}x)^2}.$ 8. $\int \left(\frac{1}{x} + 3^{-2x}\right) dx.$ 9. $\int \left(e^{1+x} - \frac{5}{5 + x^2}\right) dx.$
10. $\int \frac{dx}{x\sqrt{3x^{-2} + 1}}.$ 11. $\int \frac{x^3 + 5x - 6}{x^2 - 2} dx.$ 12. $\int \left(2^{1-x} + \frac{3}{3 + x^2}\right) dx.$
13. $\int \frac{dx}{\cos^{-2} x - 1}.$ 14. $\int \frac{(4^{-x} + x^2)4^x}{x^2} dx.$ 15. $\int \left(e^{3-x} + \frac{1}{2x^2 + 2}\right) dx.$
16. $\int \frac{dx}{\sqrt{2x^2 - 5}}.$ 17. $\int \left(\operatorname{tg}^2 \frac{x}{2} + 1\right) dx.$ 18. $\int (e^{-4x} + 2e^{5x}) dx.$
19. $\int \frac{x^2 + 4}{5x^2 + 7} dx.$ 20. $\int \frac{dx}{\sqrt{3x^2 - 4}}.$ 21. $\int (e^{-4x} - e^{5x}) e^{2x} dx.$
22. $\int \frac{\sin x + 1}{\cos x} dx.$ 23. $\int \left(\frac{1}{x^2\sqrt{x}} + 1\right) dx.$ 24. $\int \left(\frac{1}{x^2 + 1} + \frac{1}{x^2 + 1}\right) dx.$
25. $\int \frac{x^3 + 5}{x^2 - 2} dx.$ 26. $\int \frac{\cos 2x}{\cos x + \sin x} dx.$ 27. $\int \left(2^{1+x} + \frac{3}{\sqrt{3 - x^2}}\right) dx.$
28. $\int \frac{x + 4}{x^2 + 7} dx.$ 29. $\int \frac{dx}{\sqrt{1 - 3x^2}}.$ 30. $\int \left(\frac{1}{x^2 + 4} + \frac{1}{x^2 - 4}\right) dx.$

3. Найти неопределенный интеграл.

1. $\int \frac{\cos 2x}{\sin^3 2x} dx.$ 2. $\int \frac{\cos x}{\sqrt{\sin^2 x + 3}} dx.$ 3. $\int \left(x^{\frac{3}{5}} + \frac{x}{\sqrt{5 + 2x^2}}\right) dx.$
4. $\int \frac{\sin x}{\cos^5 x} dx.$ 5. $\int \frac{x^3}{3x^4 + 5} dx.$ 6. $\int \left(e^{3x+1} + \frac{x}{2 - 3x^2}\right) dx.$

$$7. \int \frac{dx}{e^{2x} + 2} dx. \quad 8. \int \frac{\sqrt{\operatorname{tg} x + 1}}{\cos^2 x} dx. \quad 9. \int \left(5e^{\frac{3}{5}x} + x\sqrt{x^2 + 1} \right) dx.$$

$$10. \int \frac{\sin 2x}{\operatorname{tg} x} dx. \quad 11. \int \frac{\cos x}{2 \sin x + 3} dx. \quad 12. \int (2 \sin^2 2x - 1) dx.$$

$$13. \int \frac{1 + e^x}{e^x - 1} dx. \quad 14. \int e^{\sin x} \cos x dx. \quad 15. \int \left(5^{2x-1} + \frac{3}{5x} \right) dx.$$

$$16. \int \frac{dx}{1 + \operatorname{ctg}^2 x}. \quad 17. \int \frac{e^{2x}}{\sqrt[4]{e^{2x} + 1}} dx. \quad 18. \int \left(2^{-\frac{x}{3}} + x\sqrt{x} \right) dx.$$

$$19. \int \frac{dx}{3e^{-x} + 2}. \quad 20. \int \frac{dx}{x\sqrt{2 - \ln^2 x}}. \quad 21. \int \left(7^{2x-1} - x^3 + \frac{3}{x} \right) dx.$$

$$22. \int \frac{x^3 dx}{\sqrt{2 - 3x^4}} \quad 23. \int \frac{x - \operatorname{arctg} x}{x^2 + 1} dx. \quad 24. \int \frac{e^{2x}}{2e^{2x} + 3} dx.$$

$$25. \int \frac{x^2 dx}{\sqrt{2 - 3x^3}} \quad 26. \int \frac{\cos x + 1}{\sin^2 x} dx. \quad 27. \int e^{2x} \operatorname{tg}(e^{2x} - 1) dx.$$

$$28. \int \frac{e^x}{e^x - 11} dx. \quad 29. \int \frac{\sin 2x}{\cos^4 2x} dx. \quad 30. \int (2 \sin^2(2x + 1) - 1) dx.$$

4. Найти неопределенный интеграл.

$$1. \int \frac{\ln^2 x + 1}{x} dx. \quad 2. \int \frac{e^x}{\sqrt{4 - e^{2x}}} dx. \quad 3. \int \sqrt{1 + 3 \sin^2 x} \sin 2x dx.$$

$$4. \int \frac{x dx}{\sqrt{1 - 3x^2}}. \quad 5. \int \frac{x dx}{\sqrt{(3x^2 - 1)^5}}. \quad 6. \int \frac{e^{\arcsin x}}{\sqrt{1 - x^2}} dx.$$

$$7. \int \frac{x^2 dx}{\sqrt{3 + 4x^6}}. \quad 8. \int \frac{\sin 2x}{1 + \sin^2 x} dx. \quad 9. \int \frac{x^2 dx}{\sqrt{1 + x^6}}.$$

$$10. \int \frac{e^{3x} + e^{2x}}{e^{2x} - 1} dx. \quad 11. \int \frac{x - \arccos x}{\sqrt{1 - x^2}} dx. \quad 12. \int x^3 (1 - 2x^4)^3 dx.$$

$$13. \int \frac{1}{x \ln x} dx. \quad 14. \int \frac{dx}{x \sqrt{1 - 3 \ln^2 x}}. \quad 15. \int \frac{\cos 2x}{(2 + 3 \sin 2x)^3} dx.$$

$$16. \int \frac{x dx}{3x^2 - 5}. \quad 17. \int \frac{2x}{x^4 - 1} dx. \quad 18. \int \cos x \cdot \sin^5 x dx.$$

$$19. \int e^{\sqrt{x}} \frac{dx}{\sqrt{x}}. \quad 20. \int \frac{e^x}{(7 - e^x)^4} dx. \quad 21. \int 2x(3 - 2x^2)^4 dx.$$

$$22. \int \frac{x^2}{\sqrt{5 - x^6}} dx. \quad 23. \int \frac{\cos x}{\sin^4 x} dx. \quad 24. \int \frac{e^x \sqrt{\arctg e^x}}{e^{2x} + 1} dx.$$

$$25. \int \frac{e^{2x}}{e^{2x} + 1} dx. \quad 26. \int \frac{e^x}{e^x + \sqrt{2}} dx. \quad 27. \int \frac{\sin x}{\sqrt{\cos^2 x + 4}} dx.$$

$$28. \int x^2 e^{x^3} dx. \quad 29. \int \frac{\ln x - 3}{x \sqrt{\ln x}} dx. \quad 30. \int \cos \ln x \frac{dx}{x}.$$

5. Найти неопределенный интеграл.

$$1. \int \frac{x dx}{x^2 + 3x + 2}. \quad 2. \int \frac{x dx}{x^2 + 3x + 2}. \quad 3. \int \frac{4x + 5}{x^2 + 3x - 2} dx.$$

$$4. \int \frac{x + 1}{8x^2 + 2x - 1} dx. \quad 5. \int \frac{x + 5}{x^2 - 8x + 15} dx. \quad 6. \int \frac{x + 4}{x^2 + x - 4} dx.$$

$$7. \int \frac{x + 1}{x^2 + x + 1} dx. \quad 8. \int \frac{x + 5}{x^2 - 4x - 5} dx. \quad 9. \int \frac{x + 4}{x^2 + x - 4} dx.$$

$$10. \int \frac{3x + 5}{x^2 + 2x + 3} dx. \quad 11. \int \frac{3x - 1}{x^2 + x - 6} dx. \quad 12. \int \frac{x - 3}{3x^2 - 3x + 2} dx.$$

$$13. \int \frac{x + 3}{2x^2 - x + 1} dx. \quad 14. \int \frac{x + 1}{4x^2 + 2x + 1} dx. \quad 15. \int \frac{x - 7}{x^2 - 6x + 5} dx.$$

$$16. \int \frac{x + 3}{4x^2 + 3x + 1} dx. \quad 17. \int \frac{x + 5}{2x^2 + 2x + 1} dx. \quad 18. \int \frac{x - 3}{5x^2 + 2x + 1} dx.$$

$$19. \int \frac{2x + 3}{3x^2 - 2x + 1} dx. \quad 20. \int \frac{x - 3}{3x^2 + x + 1} dx. \quad 21. \int \frac{x + 2}{2x^2 + 3x + 2} dx.$$

$$\begin{array}{lll}
22. \int \frac{3x-2}{2x^2-3x+4} dx. & 23. \int \frac{x-1}{4x^2-3x-1} dx. & 24. \int \frac{2x-3}{2x^2+x+2} dx. \\
25. \int \frac{3x-1}{4x^2+3x+2} dx. & 26. \int \frac{x+1}{5x^2+2x+1} dx. & 27. \int \frac{x-1}{2x^2-2x+1} dx. \\
28. \int \frac{4x-1}{3x^2+2x+5} dx. & 29. \int \frac{3x+1}{4x^2-2x+1} dx. & 30. \int \frac{5x+4}{x^2+10x+29} dx.
\end{array}$$

6. Найти неопределенный интеграл.

$$\begin{array}{lll}
1. \int \frac{x+5}{\sqrt{2-x-x^2}} dx. & 2. \int \frac{3x-4}{\sqrt{21+12x-9x^2}} dx & 3. \int \frac{4x-3}{\sqrt{2+2x-3x^2}} dx. \\
4. \int \frac{5x-3}{\sqrt{5+4x-x^2}} dx. & 5. \int \frac{x+4}{\sqrt{2x^2+2x+1}} dx. & 6. \int \frac{3x-1}{\sqrt{1-x-2x^2}} dx. \\
7. \int \frac{4x-3}{\sqrt{5x^2+3x+2}} dx. & 8. \int \frac{5x+4}{\sqrt{3x^2+4x+5}} dx. & 9. \int \frac{2x-1}{\sqrt{5+12x-9x^2}} dx. \\
10. \int \frac{3x+2}{\sqrt{1-3x-4x^2}} dx & 11. \int \frac{x-1}{\sqrt{2x^2-5x+3}} dx. & 12. \int \frac{x+3}{\sqrt{x^2-x+1}} dx. \\
13. \int \frac{3x+2}{\sqrt{x^2+x+2}} dx. & 14. \int \frac{x-3}{\sqrt{3x^2+x+1}} dx. & 15. \int \frac{4x+3}{\sqrt{1-x-3x^2}} dx. \\
16. \int \frac{x-1}{\sqrt{4x^2-4x+3}} dx & 17. \int \frac{2x+3}{\sqrt{7-6x-x^2}} dx. & 18. \int \frac{6x-1}{\sqrt{9x^2+6x-2}} dx. \\
19. \int \frac{2x+1}{\sqrt{2+3x-2x^2}} dx & 20. \int \frac{3x+1}{\sqrt{9x^2-12x+5}} dx & 21. \int \frac{4x-3}{\sqrt{1-2x-3x^2}} dx. \\
22. \int \frac{3x-1}{\sqrt{x^2-x+1}} dx. & 23. \int \frac{4x-5}{\sqrt{x^2+7x+13}} dx. & 24. \int \frac{5x+2}{\sqrt{7+6x-2x^2}} dx. \\
25. \int \frac{5x-3}{\sqrt{3-4x-4x^2}} dx & 26. \int \frac{x-3}{\sqrt{2x^2-x+2}} dx. & 27. \int \frac{x-5}{\sqrt{3x^2+3x+2}} dx. \\
28. \int \frac{x-3}{\sqrt{4x^2-3x+2}} dx & 29. \int \frac{x-5}{\sqrt{2x^2+3x+4}} dx. & 30. \int \frac{x+4}{\sqrt{2x^2-3x+5}} dx.
\end{array}$$

7. Найти неопределенный интеграл.

1. $\int (3x + 5) \cos x dx.$ 2. $\int (2x + 1) \cos 2x dx.$ 3. $\int (5x - 1) \cos 3x dx.$
4. $\int (6x - 1) \cos 4x dx.$ 5. $\int (2x - 3) \cos \frac{x}{2} dx.$ 6. $\int (5x - 3) \cos \frac{x}{3} dx.$
7. $\int (6x - 1) \sin x dx.$ 8. $\int (6x - 5) \sin 2x dx.$ 9. $\int (2x + 3) \sin \frac{x}{4} dx.$
10. $\int (3x + 2) \sin 4x dx.$ 11. $\int (7x - 5) \sin \frac{x}{2} dx.$ 12. $\int (5x + 3) \sin \frac{x}{3} dx.$
13. $\int (3x - 2) e^{2x} dx.$ 14. $\int (2x - 5) e^{2x} dx.$ 15. $\int (2x + 3) 5^{-x} dx.$
16. $\int (5x + 8) e^{-3x} dx.$ 17. $\int (3x + 4) e^{\frac{x}{2}} dx.$ 18. $\int (x + 3) 5^{-3x} dx.$
19. $\int (3x + 5) e^{-5x} dx.$ 20. $\int (5x + 4) e^{\frac{3x}{2}} dx.$ 21. $\int (6x + 7) 8^x dx.$
22. $\int (4x - 1) e^{-3x} dx.$ 23. $\int (2x - 3) e^{\frac{5x}{2}} dx.$ 24. $\int (3x - 2) 6^{2x} dx.$
25. $\int (4x + 5) 5^{-3x} dx.$ 26. $\int (5x - 3) 3^{\frac{x}{2}} dx.$ 27. $\int (3x + 8) 6^{-3x} dx.$
28. $\int (5x + 1) 2^{-3x} dx.$ 29. $\int (2x - 1) 7^{\frac{x}{2}} dx.$ 30. $\int (3x - 2) 9^{-3x} dx.$

8. Найти неопределенный интеграл.

1. $\int x^2 \cos x dx.$ 2. $\int x^2 \cos 2x dx.$ 3. $\int x^2 \cos 3x dx.$
4. $\int x^2 \cos 4x dx.$ 5. $\int x^2 \cos \frac{x}{2} dx.$ 6. $\int x^2 \cos \frac{x}{3} dx.$

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| 7. $\int x^2 \sin x \, dx.$ | 8. $\int x^2 \sin 2x \, dx.$ | 9. $\int x^2 \sin 3x \, dx.$ |
| 10. $\int x^2 \sin 4x \, dx.$ | 11. $\int x^2 \sin \frac{x}{2} \, dx.$ | 12. $\int x^2 \sin \frac{x}{3} \, dx.$ |
| 13. $\int x^3 e^x \, dx.$ | 14. $\int x^2 e^{2x} \, dx.$ | 15. $\int x^2 e^{3x} \, dx.$ |
| 16. $\int x^3 e^{4x} \, dx.$ | 17. $\int x^2 e^{\frac{x}{2}} \, dx.$ | 18. $\int x^2 e^{\frac{x}{3}} \, dx.$ |
| 19. $\int x^3 e^{-x} \, dx.$ | 20. $\int x^2 e^{-2x} \, dx.$ | 21. $\int x^2 e^{-3x} \, dx.$ |
| 22. $\int x^2 e^{-4x} \, dx.$ | 23. $\int x^2 e^{\frac{-x}{2}} \, dx.$ | 24. $\int x^2 e^{\frac{-x}{3}} \, dx.$ |
| 25. $\int x^2 3^{-x} \, dx.$ | 26. $\int x^2 3^{-2x} \, dx.$ | 27. $\int x^2 6^{-3x} \, dx.$ |
| 28. $\int x^2 2^{-3x} \, dx.$ | 29. $\int x^2 7^{\frac{x}{2}} \, dx.$ | 30. $\int x^2 9^{-3x} \, dx.$ |

9. Найти неопределенный интеграл.

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| 1. $\int e^{3x} \sin 4x \, dx.$ | 2. $\int e^{2x} \sin 3x \, dx.$ | 3. $\int e^{-2x} \sin 5x \, dx.$ |
| 4. $\int e^{3x} \cos 2x \, dx.$ | 5. $\int e^{3x} \sin 8x \, dx.$ | 6. $\int e^{-2x} \sin 6x \, dx.$ |
| 7. $\int e^{-3x} \sin 5x \, dx.$ | 8. $\int e^{-x} \sin 2x \, dx.$ | 9. $\int e^{-2x} \cos 3x \, dx.$ |
| 10. $\int e^{-2x} \sin x \, dx.$ | 11. $\int e^{\frac{x}{2}} \sin x \, dx.$ | 12. $\int e^{\frac{x}{3}} \sin 5x \, dx.$ |
| 13. $\int e^{\frac{x}{2}} \sin 2x \, dx.$ | 14. $\int e^{-x} \sin 3x \, dx.$ | 15. $\int e^{\frac{x}{4}} \sin 5x \, dx.$ |

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| 16. $\int \sqrt{2x^2 + 3} dx.$ | 17. $\int \sqrt{3x^2 + 5} dx.$ | 18. $\int \sqrt{6x^2 - 3} dx.$ |
| 19. $\int \sqrt{7x^2 - 3} dx.$ | 20. $\int \sqrt{5x^2 + 3} dx.$ | 21. $\int \sqrt{2x^2 - 7} dx.$ |
| 22. $\int \sqrt{5 - 2x^2} dx.$ | 23. $\int \sqrt{1 - 2x^2} dx.$ | 24. $\int \sqrt{7x^2 + 1} dx.$ |
| 25. $\int \sqrt{8x^2 - 3} dx.$ | 26. $\int \sqrt{5 - 3x^2} dx.$ | 27. $\int \sqrt{5 - 6x^2} dx.$ |
| 28. $\int \sqrt{2 - 9x^2} dx.$ | 29. $\int \sqrt{5x^2 + 1} dx.$ | 30. $\int \sqrt{3x^2 - 5} dx.$ |

10. Найти неопределенный интеграл.

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| 1. $\int x \ln(x - 1) dx.$ | 2. $\int \arcsin \frac{x}{5} dx.$ | 3. $\int x^3 \ln x dx.$ |
| 4. $\int \operatorname{arctg} 3x dx.$ | 5. $\int x \operatorname{arctg} x dx$ | 6. $\int \operatorname{arctg} 2x dx.$ |
| 7. $\int (1 - \ln x)^2 dx.$ | 8. $\int \arccos \frac{x}{2} dx.$ | 9. $\int \arcsin 5x dx.$ |
| 10. $\int \ln^2 x dx.$ | 11. $\int x \ln^2 x dx.$ | 12. $\int \frac{\ln x}{x^6} dx.$ |
| 13. $\int x^4 \ln x dx.$ | 14. $\int \arccos \frac{x}{3} dx.$ | 15. $\int \ln(x - 1) dx.$ |
| 16. $\int (3 + \ln x)^2 dx.$ | 17. $\int \frac{\ln(x + 1)}{x^6} dx.$ | 18. $\int \frac{\ln x}{(x + 1)^2} dx.$ |
| 19. $\int \frac{\ln x}{x^4} dx.$ | 20. $\int \frac{\ln x}{x^3} dx.$ | 21. $\int x^6 \ln x dx.$ |
| 22. $\int \arccos 5x dx.$ | 23. $\int \arccos \frac{x}{4} dx.$ | 24. $\int x \arcsin 5x dx.$ |

$$\begin{array}{lll}
25. \int x \arccos 6x \, dx. & 26. \int \frac{\arcsin \sqrt{x}}{\sqrt{x}} \, dx. & 27. \int x \arcsin x \, dx. \\
28. \int \arcsin \frac{x}{4} \, dx. & 29. \int \operatorname{arcctg} 2x \, dx. & 30. \int x \operatorname{arcctg} x \, dx.
\end{array}$$

11. Найти неопределенный интеграл.

$$\begin{array}{lll}
1. \int x \sin^2 3x \, dx. & 2. \int \frac{x \, dx}{\sin^2 2x}. & 3. \int \frac{x \, dx}{\cos^2 2x}. \\
4. \int x \sin^2 2x \, dx. & 5. \int \frac{x \, dx}{\sin^2 5x}. & 6. \int \frac{x \, dx}{\cos^2 7x}. \\
7. \int \frac{x \, dx}{\cos^2 3x}. & 8. \int \frac{x \, dx}{\sin^2 x}. & 9. \int \frac{x \, dx}{\cos^2 x}. \\
10. \int x \cos^2 x \, dx. & 11. \int x \cos^2 5x \, dx. & 12. \int e^x \ln(e^x - 1) \, dx. \\
13. \int \frac{x \operatorname{arctg} x}{\sqrt{1+x^2}} \, dx. & 14. \int x \cos^2 2x \, dx. & 15. \int x \cos^2 3x \, dx. \\
16. \int \frac{x \, dx}{\sin^2 4x}. & 17. \int x \cos^2 4x \, dx. & 18. \int x \cos^2 \frac{x}{2} \, dx. \\
19. \int \frac{x \, dx}{\sin^2 3x}. & 20. \int x \sin^2 2x \, dx. & 21. \int \frac{x \, dx}{\sin^2 7x}. \\
22. \int x \sin^2 4x \, dx. & 23. \int x \sin^2 5x \, dx. & 24. \int e^x \ln(e^x + 8) \, dx. \\
25. \int \frac{x \cos x}{\sin^3 x} \, dx. & 26. \int \frac{x \, dx}{\cos^2 6x}. & 27. \int \frac{\ln(\operatorname{tg} x) \, dx}{\cos^2 x}. \\
28. \int \frac{x \, dx}{\cos^2 6x}. & 29. \int x \sin^2 \frac{x}{4} \, dx. & 30. \int e^x \ln(2e^x - 1) \, dx.
\end{array}$$

12. Найти неопределенный интеграл.

1. $\int \frac{x^3 - 2x^2 - 3}{x^2 + 4x - 5} dx.$ 2. $\int \frac{2x^3 + 3x^2 + 2}{x^2 - 3x + 2} dx.$ 3. $\int \frac{3x^3 + 2x^2 - x - 1}{x^2 + x - 6} dx.$
4. $\int \frac{x^4 + 5x^2 - 3}{x^2 + 3x + 2} dx.$ 5. $\int \frac{2x^3 + 4x^2 - 5}{x^2 - 5x + 6} dx.$ 6. $\int \frac{2x^3 - 2x^2 - x - 3}{x^2 - x - 12} dx.$
7. $\int \frac{3x^3 - x^2 + 2}{x^2 - 2x - 3} dx.$ 8. $\int \frac{x^3 + 5x^2 + 2}{x^2 + 3x - 4} dx.$ 9. $\int \frac{x^3 + 2x^2 - 3x - 1}{x^2 - 5x + 4} dx.$
10. $\int \frac{x^4 - x^3 + 1}{x^2 + 3x + 2} dx.$ 11. $\int \frac{x^3 + 5x^2 - 4x}{x^2 + 3x + 2} dx.$ 12. $\int \frac{2x^3 - 2x^2 - x - 4}{x^2 - x - 12} dx.$
13. $\int \frac{2x^3 - 5x}{x^2 + x - 2} dx.$ 14. $\int \frac{x^4 + 3x^2 - 5x}{x^2 - 3x - 4} dx.$ 15. $\int \frac{x^4 - 2x^3 - x^2 - 3}{x^2 - x - 12} dx.$
16. $\int \frac{x^3 + 3x^2 - 5}{x^2 + 5x - 6} dx.$ 17. $\int \frac{x^3 - 3x + 1}{x^2 - 5x + 4} dx.$ 18. $\int \frac{x^3 - 5x^2 + x - 7}{x^2 + 5x + 6} dx.$
19. $\int \frac{2x^3 - 3x + 4}{x^2 - 7x + 6} dx.$ 20. $\int \frac{3x^3 - 2x^2 + x}{x^2 + 5x + 4} dx.$ 21. $\int \frac{x^4 + x^2 - 3x - 1}{x^2 + 2x - 3} dx.$
22. $\int \frac{x^4 + 3x^2 - 5}{x^2 - x - 2} dx.$ 23. $\int \frac{x^4 - 3x + 1}{x^2 + 3x - 4} dx.$ 24. $\int \frac{x^4 + 2x^2 - 3}{x^2 + 5x + 6} dx.$
25. $\int \frac{x^3 - x^2 + 2}{x^2 + 6x + 5} dx.$ 26. $\int \frac{4x^3 - x^2 - 1}{x^2 + x - 6} dx.$ 27. $\int \frac{x^3 + 3x - 5}{x^2 + 3x - 4} dx.$
28. $\int \frac{x^4 - x^2 + 1}{x^2 - 4x + 3} dx.$ 29. $\int \frac{x^4 + 4x^3 - 2x}{x^2 - x - 2} dx.$ 30. $\int \frac{x^4 - 5x^3 - 5}{x^2 - 2x - 8} dx.$

13. Найти неопределенный интеграл.

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

3. $\int \frac{3x-4}{(x-2)^2(x+5)} dx.$

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

5. $\int \frac{x^2-x+4}{(x+1)(x-2)(x-3)} dx.$

6. $\int \frac{x-7}{(x^2-8x+7)(x+1)} dx.$

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

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

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

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

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

12. $\int \frac{dx}{(x^2-7x+8)(x+1)}.$

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

14. $\int \frac{15x^2-4x-81}{(x-1)(x+4)(x-3)} dx.$

15. $\int \frac{x^2+x+1}{(x-1)^2(x-4)} dx.$

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

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

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

19. $\int \frac{x^2+2}{x^3-4x} dx.$

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

21. $\int \frac{x^2-x+5}{(x-2)(x-3)^2} dx.$

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

23. $\int \frac{4x+1}{(x+6)^2(x-5)} dx.$

24. $\int \frac{x^2-x+5}{(x-2)(x-3)^2} dx.$

25. $\int \frac{2x+1}{x^3+5x^2+6x} dx.$

26. $\int \frac{x^2+2x+6}{(x-1)(x-2)(x-4)} dx.$

27. $\int \frac{x^2+4x+4}{x(x-1)^2} dx.$

28. $\int \frac{6x^2-13x+4}{x^3-3x^2+2x} dx.$

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

$$30. \int \frac{x^2-3x+5}{(x+2)(x-3)^2} dx.$$

14. Найти неопределенный интеграл.

$$1. \int \frac{2x^2+x}{x^3+8} dx. \quad 2. \int \frac{dx}{x(x^2+2)}. \quad 3. \int \frac{7x+3}{(x+3)(x^2+2x+3)} dx.$$

$$4. \int \frac{dx}{x^3+1}. \quad 5. \int \frac{x^2+4}{x^3-5x^2+8x} dx. \quad 6. \int \frac{x^2+5x+3}{(x+1)(x^2+2)} dx.$$

$$7. \int \frac{6x-5}{x^3+4x} dx. \quad 8. \int \frac{x^2}{(x+2)(x^2+1)} dx. \quad 9. \int \frac{7x-3}{x^3+2x^2+3x} dx.$$

$$10. \int \frac{x^2}{x^3-1} dx. \quad 11. \int \frac{x+1}{x(x^2+3)} dx. \quad 12. \int \frac{3x^2-1}{(x+4)(x^2+2x+5)} dx.$$

$$13. \int \frac{3x+1}{x^3+x} dx. \quad 14. \int \frac{x^2-x+5}{x(x^2+5)} dx. \quad 15. \int \frac{x^2+x+3}{(x+2)(x^2+x+1)} dx.$$

$$16. \int \frac{dx}{x^3-8}. \quad 17. \int \frac{x^2-2}{x^3-8} dx. \quad 18. \int \frac{x^2-3x-1}{(x+2)(x^2-x+2)} dx.$$

$$19. \int \frac{3x-2}{x^3+6x} dx. \quad 20. \int \frac{x^2-x+5}{(x+2)(x^2+1)} dx. \quad 21. \int \frac{x-3}{x^3-2x^2+3x} dx.$$

$$22. \int \frac{dx}{x^3+8}. \quad 23. \int \frac{5x^2-1}{(x-1)(x^2+3)} dx. \quad 24. \int \frac{2x-3}{(x+1)(x^2+2x+5)} dx.$$

$$25. \int \frac{x dx}{x^3-8}. \quad 26. \int \frac{4x-3}{x^3+3x^2+3x} dx. \quad 27. \int \frac{x-1}{(x+3)(x^2-x+1)} dx.$$

$$28. \int \frac{5x^2-6}{x^3+27} dx. \quad 29. \int \frac{5x^2-1}{(x-1)(x^2+7)} dx. \quad 30. \int \frac{2x-3}{(x+3)(2x^2+x+2)} dx.$$

15*. Найти неопределенный интеграл.

1. $\int \frac{x^3 + 5}{(x^2 + 6x + 10)^3} dx.$

2. $\int \frac{x^2 + 1}{(x^2 + 4x + 5)^3} dx.$

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

4. $\int \frac{x^2 - 6}{(x^2 + 6x + 13)^3} dx.$

5. $\int \frac{x^3 + 3}{(x^2 - 4x + 5)^3} dx.$

6. $\int \frac{x^3 + 2}{(x^2 - 6x + 10)^3} dx.$

7. $\int \frac{x^2 + 2}{(x^2 - 6x + 10)^3} dx.$

8. $\int \frac{x^2 - 3}{(x^2 - 4x + 5)^3} dx.$

9. $\int \frac{x^3 + 1}{(x^2 - 2x + 10)^3} dx.$

10. $\int \frac{x^3 + 5}{(x^2 + 4x + 8)^3} dx.$

11. $\int \frac{x^3 - 1}{(x^2 + 4x + 5)^3} dx.$

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

13. $\int \frac{2x^3 + 3}{(x^2 - 2x + 5)^3} dx.$

14. $\int \frac{x^3 - 1}{(x^2 + 6x + 5)^3} dx.$

15. $\int \frac{x^3 + 4}{(x^2 + 6x + 18)^3} dx.$

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

17. $\int \frac{x^2 - 5}{(x^2 - 4x + 5)^3} dx.$

18. $\int \frac{x^2 + 4}{(x^2 - 4x + 8)^3} dx.$

19. $\int \frac{x^2 + 3}{(x^2 - 2x + 5)^3} dx.$

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

21. $\int \frac{x^3 + 2}{(x^2 + 6x + 10)^3} dx.$

22. $\int \frac{x^2 + 3}{(x^2 + 4x + 8)^3} dx.$

23. $\int \frac{x^3 + 4}{(x^2 + 2x + 10)^3} dx.$

24. $\int \frac{x^2 + 1}{(x^2 + 2x + 5)^3} dx.$

25. $\int \frac{x^3 + 1}{(x^2 + 4x + 5)^3} dx.$

26. $\int \frac{x^3}{(x^2 + 4x + 8)^3} dx.$

$$27. \int \frac{x^2 + 6}{(x^2 + 4x + 5)^3} dx.$$

$$28. \int \frac{x^2 + 5}{(x^2 + 4x + 8)^3} dx.$$

$$29. \int \frac{x^2 + 1}{(x^2 + 2x + 2)^3} dx.$$

$$30. \int \frac{x^3 + x}{(x^2 + 6x + 10)^3} dx.$$

16. Найти неопределенный интеграл.

$$1. \int \cos 6x \cdot \cos x \, dx.$$

$$2. \int \sin 6x \cdot \sin 9x \, dx.$$

$$3. \int \cos 3x \cdot \cos x \, dx.$$

$$4. \int \cos 4x \cdot \cos x \, dx.$$

$$5. \int \sin 2x \cdot \sin 9x \, dx.$$

$$6. \int \cos 3x \cdot \sin 8x \, dx.$$

$$7. \int \cos 7x \cdot \cos x \, dx.$$

$$8. \int \sin 3x \cdot \sin 7x \, dx.$$

$$9. \int \cos 3x \cdot \sin 5x \, dx.$$

$$10. \int \cos 5x \cdot \cos x \, dx.$$

$$11. \int \sin 2x \cdot \cos 7x \, dx.$$

$$12. \int \cos 5x \cdot \sin 7x \, dx.$$

$$13. \int \cos 6x \cdot \sin x \, dx.$$

$$14. \int \sin 10x \cdot \sin 3x \, dx.$$

$$15. \int \cos 3x \cdot \cos 6x \, dx.$$

$$16. \int \sin 4x \cdot \sin x \, dx.$$

$$17. \int \sin x \cdot \sin 9x \, dx.$$

$$18. \int \sin 3x \cdot \sin 8x \, dx.$$

$$19. \int \sin 2x \cdot \sin 7x \, dx.$$

$$20. \int \sin 6x \cdot \cos 3x \, dx.$$

$$21. \int \sin 6x \cdot \cos 7x \, dx.$$

$$22. \int \sin 6x \cdot \sin x \, dx.$$

23. $\int \sin 6x \cdot \sin 3x dx.$

24. $\int \sin 8x \cdot \sin 3x dx.$

25. $\int \cos 5x \cdot \cos \frac{x}{4} dx.$

26. $\int \sin x \cdot \cos \frac{x}{3} dx.$

27. $\int \cos 5x \cdot \sin \frac{x}{2} dx.$

28. $\int \sin \frac{x}{3} \cdot \sin 7x dx.$

29. $\int \sin 6x \cdot \cos \frac{2x}{3} dx.$

30. $\int \sin 4x \cdot \sin \frac{x}{5} dx.$

17. Найти неопределенный интеграл.

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

2. $\int \cos^3 4x dx.$

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

4. $\int \cos^3 5x dx.$

5. $\int \sin^3 2x \cdot \cos 2x dx.$

6. $\int \cos \frac{x}{3} \cdot \sin^2 \frac{x}{3} dx.$

7. $\int \frac{\sin^3 x}{\cos^4 x} dx.$

8. $\int \frac{\cos^3 3x}{\sin^4 3x} dx.$

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

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

11. $\int \sin^5 x \cdot \cos^2 x dx.$

12. $\int \cos^3 x \cdot \sin^2 x dx.$

13. $\int \frac{\sin^3 x}{\cos x} dx.$

14. $\int \sin^3 4x \cdot \cos^2 4x dx.$

15. $\int \cos^2 x \cdot \sin^3 x dx.$

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

17. $\int \sin^3 4x dx.$

18. $\int \cos^3 x \cdot \sin^5 x dx.$

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

20. $\int \sin^4 3x \cdot \cos^3 3x dx.$

21. $\int \cos^5 x \cdot \sin^2 x dx.$

22. $\int \frac{\sin^3 3x}{\cos 3x} dx.$

23. $\int \sin^3 2x dx.$

24. $\int \cos^6 x \cdot \sin^7 x dx.$

25. $\int \cos^3 2x dx.$

26. $\int \cos^3 5x \cdot \sin 5x dx.$

27. $\int \cos \frac{x}{4} \cdot \sin^3 \frac{x}{4} dx.$

$$28. \int \frac{\cos^3 2x}{\sin^2 2x} dx. \quad 29. \int \sin^3 x \cdot \cos^3 x dx. \quad 30. \int \cos^4 x \cdot \sin^3 x dx.$$

18. Найти неопределенный интеграл.

$$1. \int \sin^4 5x dx.$$

$$2. \int \cos^4 6x dx.$$

$$3. \int \sin^4 7x dx.$$

$$4. \int \sin^4 4x dx.$$

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

$$6. \int \sin^6 6x dx.$$

$$7. \int \sin^6 4x dx.$$

$$8. \int \cos^4 3x dx.$$

$$9. \int \sin^6 \frac{x}{2} dx.$$

$$10. \int \cos^6 x dx.$$

$$11. \int \cos^6 \frac{x}{2} dx.$$

$$12. \int \cos^4 5x dx.$$

$$13. \int \sin^6 \frac{x}{4} dx.$$

$$14. \int \cos^4 4x dx.$$

$$15. \int \sin^4 3x dx.$$

$$16. \int \sin^4 x \cdot \cos^2 x dx.$$

$$17. \int \cos^4 x \cdot \sin^4 x dx.$$

$$18. \int \cos^4 \frac{x}{2} \cdot \sin^2 \frac{x}{2} dx.$$

$$19. \int \sin^4 2x \cdot \cos^2 2x dx.$$

$$20. \int \cos^4 2x \cdot \sin^2 2x dx.$$

$$21. \int \cos^2 \frac{x}{2} \cdot \sin^4 \frac{x}{2} dx.$$

$$22. \int \sin^4 x \cdot \cos^4 x dx.$$

$$23. \int \cos^4 \frac{x}{2} \cdot \sin^4 \frac{x}{2} dx.$$

$$24. \int \cos^4 \frac{x}{2} \cdot \sin^4 \frac{x}{2} dx.$$

25. $\int \sin^4 3x \cdot \cos^4 3x \, dx.$

26. $\int \cos^2 2x \cdot \sin^4 2x \, dx.$

27. $\int \cos^2 3x \cdot \sin^4 3x \, dx.$

28. $\int \sin^2 x \cdot \cos^4 x \, dx.$

29. $\int \cos^4 2x \cdot \sin^4 2x \, dx.$

30. $\int \cos^6 \frac{x}{4} \, dx.$

19. Найти неопределенный интеграл.

1. $\int \frac{1 + \operatorname{tg} x}{1 - \operatorname{tg} x} \, dx.$

2. $\int \frac{2 + \operatorname{tg} x}{3 \operatorname{tg} x - 1} \, dx.$

3. $\int \frac{dx}{\operatorname{tg} x + 4 \operatorname{ctg} x}.$

4. $\int \frac{1 + \operatorname{ctg}^2 x}{1 - \operatorname{ctg} x} \, dx.$

5. $\int \operatorname{tg}^6 x \, dx.$

6. $\int \frac{\operatorname{tg} 2x}{1 - \operatorname{tg} 2x} \, dx.$

7. $\int \frac{\operatorname{tg} x}{2 + \operatorname{tg} x} \, dx.$

8. $\int \frac{1 + \operatorname{ctg}^2 x}{\operatorname{ctg} x (1 - \operatorname{ctg}^2 x)} \, dx.$

9. $\int \operatorname{tg}^7 x \, dx.$

10. $\int \frac{dx}{\operatorname{tg} x - 1}.$

11. $\int \frac{dx}{2 \operatorname{tg} x + 3}.$

12. $\int \frac{1 + \operatorname{tg}^2 x}{(2 - \operatorname{tg} x)^3} \, dx.$

13. $\int \frac{4 + \operatorname{ctg} 2x}{4 - \operatorname{ctg} 2x} \, dx.$

14. $\int \operatorname{ctg}^6 x \, dx.$

15. $\int \frac{dx}{3 \operatorname{ctg} x - 1}.$

16. $\int \frac{dx}{\operatorname{ctg} 2x - 3}.$

17. $\int \operatorname{tg}^3 6x \, dx.$

18. $\int \operatorname{ctg}^6 6x \, dx.$

19. $\int \operatorname{ctg}^3 x \, dx.$

20. $\int \operatorname{ctg}^5 4x \, dx.$

21. $\int \operatorname{ctg}^5 3x \, dx.$

22. $\int \operatorname{tg}^5 x \, dx.$

23. $\int \operatorname{tg}^4 2x \, dx.$

24. $\int \operatorname{tg}^5 2x \, dx.$

25. $\int \operatorname{ctg}^3 x \, dx.$

26. $\int \operatorname{ctg}^5 4x \, dx.$

27. $\int \operatorname{ctg}^5 3x \, dx.$

28. $\int \operatorname{ctg}^3 5x \, dx.$

29. $\int \frac{\operatorname{tg} x}{3 - \operatorname{tg} x} \, dx.$

30. $\int \frac{dx}{3 \operatorname{tg} 2x + 4}.$

20. Найти неопределенный интеграл.

1. $\int \frac{dx}{4 + \cos x}.$

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

3. $\int \frac{dx}{5 + \cos 2x}.$

4. $\int \frac{dx}{2 + \cos 4x}.$

5. $\int \frac{dx}{2 + \sin x + 2 \cos x}.$

6. $\int \frac{dx}{2 + \cos 3x}.$

7. $\int \frac{dx}{3 + \cos x}.$

8. $\int \frac{dx}{2 + 2 \sin x + \cos x}.$

9. $\int \frac{dx}{5 - \cos 2x}.$

10. $\int \frac{dx}{4 + \cos 2x}.$

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

12. $\int \frac{dx}{7 + \cos x}.$

13. $\int \frac{dx}{3 + \cos 4x}.$

14. $\int \frac{dx}{1 + \sin x + \cos x}.$

15. $\int \frac{dx}{2 + \cos 5x}.$

16. $\int \frac{dx}{2 + \cos 5x}.$

17. $\int \frac{dx}{2 - \cos x}.$

18. $\int \frac{dx}{3 - \cos 2x}.$

19. $\int \frac{dx}{3 + \cos 3x}.$

20. $\int \frac{dx}{3 + \cos x}.$

21. $\int \frac{dx}{2 + \cos 2x}.$

22. $\int \frac{dx}{2 + \cos x}.$

23. $\int \frac{dx}{2 + \sin x}.$

24. $\int \frac{dx}{6 + \cos x}.$

25. $\int \frac{dx}{4 - \cos x}.$

26. $\int \frac{dx}{4 + \sin 3x}.$

27. $\int \frac{dx}{3 + \sin 3x}.$

28. $\int \frac{dx}{3 + \sin 2x}.$

29. $\int \frac{dx}{2 + \sin 3x}.$

30. $\int \frac{dx}{2 - \cos 4x}.$

21. Найти неопределенный интеграл.

1. $\int \frac{x^3 dx}{\sqrt{x+1}}.$

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

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

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

5. $\int \frac{dx}{x+\sqrt{x}}.$

6. $\int \frac{dx}{x\sqrt{1+5x}}.$

7. $\int \frac{dx}{\sqrt{x}(4+\sqrt[3]{x})}.$

8. $\int \frac{\sqrt{x-1}}{x} dx.$

9. $\int \frac{dx}{(1+2x)\sqrt{1+x}}.$

10. $\int \frac{\sqrt{x+1}}{1-x} dx.$

11. $\int \frac{dx}{(x+2)\sqrt{x+1}}.$

12. $\int \frac{4-2\sqrt{x}}{7+x} dx.$

13. $\int \frac{\sqrt{x}-1}{4+3x} dx.$

14. $\int \frac{dx}{1+\sqrt{x+3}}.$

15. $\int \frac{dx}{(1-x)\sqrt{x}}.$

16. $\int \frac{\sqrt{x}}{x(1+\sqrt[3]{x})} dx.$

17. $\int \frac{dx}{\sqrt{x}(1+2\sqrt[3]{x})}.$

18. $\int \frac{\sqrt{x} dx}{1+x}.$

19. $\int \frac{dx}{\sqrt{x}(1+\sqrt[3]{x})}.$

20. $\int \frac{\sqrt{x} dx}{1-x}.$

21. $\int \frac{x\sqrt{x} dx}{1+x}.$

22. $\int \frac{x\sqrt{x}}{x-1} dx.$

23. $\int \frac{dx}{x\sqrt{x+1}}.$

24. $\int \frac{dx}{x\sqrt{x+4}}.$

25. $\int \frac{dx}{x\sqrt{4x-1}}.$

26. $\int \frac{dx}{1-x}.$

27. $\int \frac{x\sqrt{x} dx}{2-x}.$

28. $\int \frac{dx}{\sqrt{x}(1+\sqrt[3]{x})}.$

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

30. $\int \frac{\sqrt{x+1}}{x} dx.$

22. Найти неопределенный интеграл.

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

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

3. $\int \frac{x^3 dx}{\sqrt{(x^2+1)^5}}.$

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

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

6. $\int \frac{dx}{x^2\sqrt{2+x^2}}.$

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

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

9. $\int \frac{dx}{\sqrt{(x^2+4)^3}}.$

10. $\int \frac{dx}{\sqrt{(9x^2 + 16)^3}}.$

11. $\int \frac{dx}{x\sqrt{16 - x^2}}.$

12. $\int \frac{dx}{x^2\sqrt{5 - x^2}}.$

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

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

15. $\int \sqrt{4 - x^2} dx.$

16. $\int \frac{x^2 dx}{\sqrt{(1 - x^2)^5}}.$

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

18. $\int \sqrt{9 - 4x^2} dx.$

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

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

21. $\int \frac{dx}{x\sqrt{x^2 - 16}}.$

22. $\int \frac{dx}{\sqrt{(4x^2 - 9)^3}}.$

23. $\int \frac{dx}{x^2\sqrt{4x^2 - 9}}.$

24. $\int \frac{dx}{x^3\sqrt{4x^2 - 9}}.$

25. $\int \frac{\sqrt{3x^2 - 16}}{x} dx.$

26. $\int \frac{\sqrt{x^2 - 9}}{x} dx.$

27. $\int \frac{dx}{\sqrt{(9x^2 - 1)^3}}.$

28. $\int \frac{dx}{x\sqrt{9x^2 - 4}}.$

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

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

23*. Найти неопределенный интеграл, используя подстановки Чебышева.

1. $\int \frac{dx}{\sqrt[5]{x^3}(4 - \sqrt[15]{x})^2}.$

2. $\int \frac{dx}{\sqrt[3]{x}(3 - \sqrt[12]{x})^3}.$

3. $\int \frac{dx}{\sqrt{x}(5 + \sqrt[4]{x})^{10}}.$

4. $\int \sqrt[7]{x^3}(1 - \sqrt[3]{x^2})^2 dx.$

5. $\int \sqrt[8]{x^5}(2 + \sqrt[3]{x})^4 dx.$

6. $\int \frac{dx}{\sqrt{x}(9 - \sqrt[3]{x})^2}.$

7. $\int \frac{dx}{\sqrt{x}(11 - \sqrt[4]{x})^7}.$

8. $\int \frac{dx}{\sqrt[3]{x}(4 - 3\sqrt[6]{x})^3}.$

9. $\int \sqrt[3]{x^7} \left(1 + 3\sqrt[8]{x^7}\right)^4 dx.$

10. $\int \sqrt[5]{x^3} \left(3 - \sqrt[3]{x^4}\right)^4 dx.$

$$11. \int \sqrt[9]{x^4} (1 + 2\sqrt[3]{x})^5 dx.$$

$$12. \int \frac{dx}{\sqrt{x}(2 + \sqrt[10]{x})^2}.$$

$$13. \int \sqrt[4]{x^5} (2 - \sqrt[3]{x})^5 dx.$$

$$14. \int \frac{dx}{\sqrt{x}(1 + 16\sqrt[3]{x})^2}.$$

$$15. \int \frac{dx}{\sqrt[6]{x^7}(9 + \sqrt[6]{x})^3}.$$

$$16. \int \sqrt[5]{x^2} (8 - 3\sqrt[10]{x})^4 dx.$$

$$17. \int \sqrt[6]{x^5} (1 + \sqrt[7]{x^2})^5 dx.$$

$$18. \int \frac{\sqrt{x} dx}{(4 - \sqrt[3]{x})^2}.$$

$$19. \int \sqrt[3]{x^4} (1 - 2\sqrt[7]{x^3})^4 dx.$$

$$20. \int \frac{dx}{\sqrt{x}(15 - 2\sqrt[4]{x})^5}.$$

$$21. \int \frac{dx}{\sqrt[3]{x}(7 - 2\sqrt[6]{x})^3}.$$

$$22. \int \sqrt[7]{x^4} (4 + 3\sqrt[8]{x^3})^4 dx.$$

$$23. \int \sqrt[5]{x^6} (2 + 3\sqrt[8]{x^3})^4 dx.$$

$$24. \int \frac{\sqrt{x} dx}{(2 + \sqrt[3]{x})^2}.$$

$$25. \int \sqrt{x^3} (1 + \sqrt[3]{x^4})^2 dx.$$

$$26. \int \sqrt[6]{x^7} (3 - \sqrt[3]{x^2})^4 dx.$$

$$27. \int \frac{\sqrt{x} dx}{\sqrt[5]{x^4}(3 + \sqrt[5]{x^2})^2}.$$

$$28. \int \sqrt{x^3} (1 + \sqrt[3]{x^4})^2 dx.$$

$$29. \int \sqrt[4]{x^9} (3 + \sqrt[5]{x^2})^4 dx.$$

$$30. \int \frac{dx}{\sqrt[3]{x^2}(7 + \sqrt[3]{x^2})^2}.$$

24*. Найти неопределенный интеграл, используя подстановки Чебышева.

$$1. \int \frac{\sqrt{4 + \sqrt[9]{x}}}{\sqrt[3]{x^2}} dx.$$

$$2. \int \sqrt[3]{x^4} \sqrt{2 + \sqrt[3]{x^2}} dx.$$

$$3. \int x^5 \sqrt{(1 + x^2)^2} dx.$$

$$4. \int \frac{\sqrt{6 - \sqrt[3]{x}}}{x} dx.$$

$$5. \int \sqrt[3]{x^4}^4 \sqrt{2 + \sqrt[6]{x^7}} dx.$$

$$7. \int \sqrt[3]{x^7}^5 \sqrt{(2 + \sqrt[3]{x^2})^2} dx.$$

$$9. \int \frac{\sqrt{1 + \sqrt[3]{x}}}{\sqrt[3]{x^4}} dx.$$

$$11. \int x^7 \sqrt[5]{4 + \sqrt[3]{x^8}} dx.$$

$$13. \int \sqrt[4]{x^3}^3 \sqrt{1 + \sqrt[8]{x^7}} dx.$$

$$15. \int \sqrt[4]{x}^3 \sqrt{1 + \sqrt[8]{x^5}} dx.$$

$$17. \int \sqrt{x^3}^4 \sqrt{4 + \sqrt[4]{x^5}} dx.$$

$$19. \int \sqrt[5]{x}^3 \sqrt{2 + \sqrt[5]{x^3}} dx.$$

$$21. \int \sqrt[3]{x^2}^4 \sqrt{7 + \sqrt[6]{x^5}} dx.$$

$$23. \int \sqrt[3]{x^2}^3 \sqrt{5 + \sqrt[6]{x^5}} dx.$$

$$25. \int \sqrt[5]{x^3}^3 \sqrt{(6 + \sqrt[5]{x^4})^2} dx.$$

$$27. \int \sqrt[3]{x}^4 \sqrt{7 + \sqrt[3]{x^2}} dx.$$

$$29. \int \sqrt[5]{x^4}^3 \sqrt{3 + \sqrt[5]{x^3}} dx.$$

$$6. \int x^3 \sqrt[5]{(3 + \sqrt[3]{x^4})^2} dx.$$

$$8. \int \frac{dx}{\sqrt[3]{x}(4 + \sqrt[6]{x})^{\frac{1}{4}}}.$$

$$10. \int \sqrt{x^3}^3 \sqrt{1 + \sqrt[4]{x^5}} dx.$$

$$12. \int x^{13} \sqrt[3]{3 - \sqrt[3]{x^{14}}} dx.$$

$$14. \int \sqrt{x}^3 \sqrt{(1 + \sqrt[4]{x^3})^2} dx.$$

$$16. \int \sqrt{x}^3 \sqrt{3 - \sqrt[4]{x^3}} dx.$$

$$18. \int \sqrt[3]{x^7} \sqrt{3 + \sqrt[5]{x^2}} dx.$$

$$20. \int \sqrt[5]{x^2} \sqrt{3 + \sqrt[10]{x^7}} dx.$$

$$22. \int \sqrt[5]{x^2}^3 \sqrt{4 + \sqrt[15]{x^7}} dx.$$

$$24. \int \sqrt[5]{x^4} \sqrt{2 + \sqrt[5]{x^3}} dx.$$

$$26. \int \sqrt[3]{x}^5 \sqrt{5 + \sqrt[12]{x^5}} dx.$$

$$28. \int \sqrt[3]{x^2}^3 \sqrt{6 + \sqrt[9]{x^5}} dx.$$

$$30. \int \sqrt[5]{x^2} \sqrt{4 + \sqrt[15]{x^3}} dx.$$

25*. Найти неопределенный интеграл, используя подстановки Чебышева.

1. $\int \frac{dx}{x^{11}\sqrt{1+x^4}}.$
2. $\int \frac{dx}{x^2\sqrt[3]{(1+x^3)^5}}.$
3. $\int \frac{dx}{x^4\sqrt{1+x^2}}.$
4. $\int \frac{dx}{x^2\sqrt{1+x^2}}.$
5. $\int \frac{dx}{x^3\sqrt[3]{2-x^3}}.$
6. $\int \frac{dx}{x^2\sqrt{(1+x^2)^3}}.$
7. $\int \frac{\sqrt{1+x^2}}{x^2} dx.$
8. $\int \frac{\sqrt[3]{(1+2x^3)^2}}{x^6} dx.$
9. $\int \frac{dx}{\sqrt{1+x^4}}.$
10. $\int \frac{\sqrt[5]{1+\sqrt[3]{x}}}{\sqrt[5]{x^7}} dx.$
11. $\int \frac{\sqrt[3]{1+\sqrt[4]{x^3}}}{x^2} dx.$
12. $\int \frac{\sqrt{1+x}}{\sqrt{x^3}} dx.$
13. $\int \frac{dx}{x^6\sqrt{x^2-1}}.$
14. $\int \frac{\sqrt{1+2x}}{\sqrt{x^5}} dx.$
15. $\int \frac{dx}{x^7\sqrt{1+x^4}}.$
16. $\int \frac{\sqrt[4]{1+x^4}}{x^{10}} dx.$
17. $\int \frac{dx}{x^2\sqrt[3]{(5+x^3)^5}}.$
18. $\int \frac{\sqrt[4]{1+x^4}}{x^{14}} dx.$
19. $\int \frac{\sqrt[3]{1+x^3}}{x^8} dx.$
20. $\int \frac{dx}{x^4\sqrt{(1+x^2)^3}}.$
21. $\int \frac{\sqrt{1+x^3}}{\sqrt{x^{17}}} dx.$
22. $\int \frac{\sqrt{1+x^4}}{x^{15}} dx.$
23. $\int \frac{dx}{x^{11,5}\sqrt{1+x^3}}.$
24. $\int \frac{\sqrt{1+x^5}}{\sqrt{x^{37}}} dx.$
25. $\int \frac{\sqrt[3]{(1+\sqrt{x^3})^2}}{x^8} dx.$
26. $\int \frac{dx}{\sqrt{x^9}\sqrt[3]{(1+\sqrt{x^3})^2}}.$
27. $\int \frac{\sqrt[3]{(1+\sqrt{x^3})^2}}{x^5} dx.$
28. $\int \sqrt[3]{x}(1-x^2)^{-\frac{5}{3}} dx.$
29. $\int \frac{dx}{\sqrt{x^{15}}\sqrt[3]{(1+\sqrt{x^3})^2}}.$
30. $\int \frac{\sqrt[3]{1+x^3}}{x^2} dx.$

26*. Найти неопределенный интеграл, используя подстановки Эйлера.

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

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

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

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

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

6. $\int \frac{\sqrt{x^2+2x+2}}{x} dx.$

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

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

9. $\int \frac{dx}{(x^2-1)\sqrt{x^2-x-1}}.$

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

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

12. $\int \frac{\sqrt{x^2+3x}}{x^2} dx.$

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

14. $\int \frac{dx}{x\sqrt{x^2+2x-1}}.$

15. $\int \frac{\sqrt{9x^2-x-1}}{x} dx.$

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

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

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

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

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

21. $\int \frac{2x^3-2x-3}{\sqrt{x^2+2x+2}} dx.$

22. $\int \frac{dx}{(x^2-3x)\sqrt{x^2-3x}}.$

23. $\int \frac{dx}{(9x^2+x)\sqrt{9x^2+x}}.$

24. $\int \frac{dx}{(4x^2-3x)\sqrt{4x^2-3x}}.$

25. $\int \frac{\sqrt{4x^2-3x}}{(x-1)^2} dx.$

26. $\int \frac{x^2-3x+1}{\sqrt{9x^2-4x}} dx.$

$$27. \int \frac{3x^2 + x - 4}{\sqrt{x^2 - 9x}} dx.$$

$$28. \int \frac{\sqrt{9x^2 + 8x}}{(2x - 1)^2} dx.$$

$$29. \int \frac{\sqrt{x^2 - 2x}}{(x + 2)^2} dx.$$

$$30. \int \frac{1 + x - 2x^2}{\sqrt{x^2 + x}} dx.$$

27*. Найти неопределенный интеграл, используя подстановки Эйлера.

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

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

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

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

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

$$6. \int \frac{\sqrt{x^2 - x + 1}}{x - 1} dx.$$

$$7. \int \frac{x^2 - x}{\sqrt{x^2 - x + 1}} dx.$$

$$8. \int \frac{x^2 + 4x}{\sqrt{1 - 4x - x^2}} dx.$$

$$9. \int \frac{x^2}{\sqrt{x^2 + x + 1}} dx.$$

$$10. \int \frac{x^2 + 3x}{\sqrt{1 - 3x - x^2}} dx.$$

$$11. \int \frac{x^2 - 2}{\sqrt{1 - 2x - x^2}} dx.$$

$$12. \int \frac{2x^2 - 3x - 5}{\sqrt{x^2 - 2x + 9}} dx.$$

$$13. \int \frac{dx}{(x^2 + x)\sqrt{x^2 + x}}.$$

$$14. \int \frac{x - 1}{x^2 \sqrt{2x^2 - 2x + 1}} dx.$$

$$15. \int \frac{\sqrt{x^2 + 5x + 4}}{x^2} dx.$$

$$16. \int \frac{x^2 + x - 1}{\sqrt{2x^2 + 2x + 1}} dx.$$

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

$$18. \int \frac{x dx}{(x + 1)\sqrt{1 - x - x^2}}.$$

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

$$20. \int \frac{x^2 + 1}{\sqrt{4 - 3x - x^2}} dx.$$

$$21. \int \frac{x^2 + 1}{\sqrt{4 - 3x - x^2}} dx.$$

$$22. \int \frac{x^2 - 2x + 1}{\sqrt{x^2 - 2x + 4}} dx.$$

$$23. \int \frac{x^2 - x + 1}{\sqrt{4x^2 - 5x + 1}} dx.$$

$$24. \int \frac{x^2 - 3x + 1}{\sqrt{x^2 + 2x - 3}} dx.$$

$$25. \int \frac{\sqrt{x^2 + x + 9}}{x^2} dx.$$

$$26. \int \frac{\sqrt{3x^2 - x + 4}}{x^2} dx.$$

$$27. \int \frac{\sqrt{1 - 3x - 4x^2}}{x^2} dx.$$

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

$$29. \int \frac{\sqrt{x^2 - x + 4}}{(x + 1)^2} dx.$$

$$30. \int \frac{\sqrt{9 - x - x^2}}{x} dx.$$

28*. Найти неопределенный интеграл, используя подстановки Эйлера.

$$1. \int \frac{\sqrt{x^2 + x - 6}}{x^2} dx.$$

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

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

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

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

$$6. \int \frac{\sqrt{x^2 + 2x - 3}}{x} dx.$$

$$7. \int \frac{\sqrt{4x^2 + x - 7}}{x} dx.$$

$$8. \int \frac{\sqrt{x^2 + 5x - 6}}{x} dx.$$

$$9. \int \frac{dx}{(x + 1)^3 \sqrt{x^2 + 2x - 3}}.$$

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

$$11. \int \frac{2x^2 + 3x + 4}{\sqrt{2x^2 + 3x - 5}} dx.$$

$$12. \int \frac{3x^2 - 5x - 14}{\sqrt{3 - 2x - x^2}} dx.$$

$$13. \int \frac{dx}{(x^2 - 2x)\sqrt{x^2 - 2x}}.$$

$$14. \int \frac{dx}{(x^2 + 4x)\sqrt{x^2 + 4x}}.$$

$$15. \int \frac{dx}{(4x^2 - x)\sqrt{4x^2 - x}}.$$

$$17. \int \frac{dx}{(2x - 3)\sqrt{4x - x^2}}.$$

$$19. \int \frac{dx}{(x^2 + 5x)\sqrt{x^2 + 5x}}.$$

$$21. \int \frac{x^2 - x + 1}{\sqrt{x^2 - 3x}} dx.$$

$$23. \int \frac{x^2 + 2x - 3}{\sqrt{x^2 - 4x}} dx.$$

$$25. \int \frac{x^2 dx}{\sqrt{3x^2 - x - 2}}.$$

$$27. \int \frac{x^2 - 2x}{\sqrt{x^2 - 4x - 5}} dx.$$

$$29. \int \frac{\sqrt{3x^2 - x}}{(x + 1)^2} dx.$$

$$16. \int \frac{\sqrt{x^2 + x - 6}}{x} dx.$$

$$18. \int \frac{dx}{(2x^2 + 3x)\sqrt{2x^2 + 3x}}.$$

$$20. \int \frac{dx}{(x^2 - 6x)\sqrt{x^2 - 6x}}.$$

$$22. \int \frac{2x^2 - x + 1}{\sqrt{4x^2 - x}} dx.$$

$$24. \int \frac{x^2 + 8x - 1}{\sqrt{x^2 + 8x + 7}} dx.$$

$$26. \int \frac{x^2}{\sqrt{5x^2 + x - 6}} dx.$$

$$28. \int \frac{2x^2 + x - 3}{\sqrt{2x - x^2}}.$$

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