

Расчетно-графическая работа 2.1
Неопределенные интегралы

1. Найти неопределенный интеграл.

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

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

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

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

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

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

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

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

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

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

11. $\int \frac{dx}{7x^2 + 6}.$

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

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

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

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

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

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

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

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

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

21. $\int \left(e^{2x} + \frac{3x^2}{x^2 + 16} \right) dx.$

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

23. $\int \frac{x^2 + 4}{x^2 + 16} dx.$

24. $\int e^x \left(1 - \frac{e^{-x}}{x^2 - 1} \right) dx.$

25. $\int \frac{x^2}{3x^2 - 1} dx.$

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

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

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

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

30. $\int \left(\frac{2}{x} + \frac{3}{x^2} + \frac{4}{x^3} \right) dx.$

2. Найти неопределенный интеграл.

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

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

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

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

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

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

7. $\int \left(e^{x+1} + \frac{5}{5 + x^2} \right) dx.$

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

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

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

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

12. $\int e^{x+1} \left(1 + \frac{e^{-x}}{x^3} \right) dx.$

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

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

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

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

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

18. $\int \left(\operatorname{tg}^2 \frac{x}{2} + 1 \right) dx.$

Расчетно-графическая работа 2.1
Неопределенные интегралы

1. Найти неопределенный интеграл.

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

2. Найти неопределенный интеграл.

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| 1. $\int \frac{\cos 2x}{\cos x - \sin x} dx.$ | 2. $\int \sin^2 \frac{x}{2} dx.$ | 3. $\int \left(1 - 2 \cos^2 \frac{x}{2} \right) dx.$ |
| 4. $\int \left(e^{3-x} + \frac{1}{5+2x^2} \right) dx.$ | 5. $\int \frac{(x^2-1)^2}{x^2-2} dx.$ | 6. $\int \frac{dx}{x\sqrt{4x^2+1}}.$ |
| 7. $\int \left(e^{x+1} + \frac{5}{5+x^2} \right) dx.$ | 8. $\int \frac{dx}{3+(\sqrt{3}x)^2}.$ | 9. $\int \frac{x^3+5}{x+2} dx.$ |
| 10. $\int \left(2^{1-x} + \frac{3}{3+x^2} \right) dx.$ | 11. $\int \frac{dx}{x\sqrt{x^2+1}}.$ | 12. $\int e^{x+1} \left(1 + \frac{e^{-x}}{x^3} \right) dx.$ |
| 13. $\int \left(e^{3+x} + \frac{1}{2+2x^2} \right) dx.$ | 14. $\int \frac{dx}{\cos^2 x - 1}.$ | 15. $\int \frac{(4^{-x} + x^2) 4^x}{x^2} dx.$ |
| 16. $\int (e^{-4x} + 2e^{-3x}) dx.$ | 17. $\int \frac{dx}{\sqrt{4x^2+3}}.$ | 18. $\int \left(\operatorname{tg}^2 \frac{x}{2} + 1 \right) dx.$ |

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

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

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

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

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

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

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

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

21. $\int e^x \left(1 + \frac{e^{-x}}{x^2-1} \right) dx.$

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

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

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

3. Найти неопределенный интеграл.

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

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

3. $\int \left(x^{\frac{3}{7}} + \frac{x}{\sqrt{5+2x^2}} \right) dx.$

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

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

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

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

8. $\int (2 \sin^2 2x - 1) dx.$

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

10. $\int \frac{\sin 2x}{\lg x} dx.$

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

12. $\int \left(7^{2x-1} - x^3 + \frac{3}{x} \right) dx.$

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

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

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

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

17. $\int e^{\sin x} \cos x dx.$

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

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

20. $\int \frac{e^x}{e^x+5} dx.$

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

22. $\int \frac{dx}{1+c \operatorname{tg}^2 x}.$

23. $\int \frac{x - \operatorname{arctg} x}{x^2+1} dx.$

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

25. $\int \frac{e^{2x}}{2e^{2x}+3} dx.$

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

27. $\int e^{2x} \operatorname{tg}(e^{2x}-1) dx.$

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

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

30. $\int (2 \sin^2(2x+1) - 1) dx.$

4. Найти неопределенный интеграл.

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

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

3. $\int \cos(\ln x) \frac{dx}{x}.$

4. $\int \frac{xdx}{\sqrt{9+16x^2}}.$

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

6. $\int \frac{e^{\operatorname{arcsin} x}}{\sqrt{1-x^2}} dx.$

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

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

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

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

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

12. $\int x^3 (1-2x^4)^3 dx.$

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

5. Найти неопределенный интеграл.

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

6. Найти неопределенный интеграл.

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

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| 13. $\int \frac{3x+2}{\sqrt{x^2+x+2}} dx.$ | 14. $\int \frac{3x-4}{\sqrt{21+12x-9x^2}} dx.$ | 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. $\int \frac{4x+3}{\sqrt{1-x-3x^2}} dx.$ |
| 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. $\int \frac{x+4}{\sqrt{2x^2-3x+5}} dx.$ |

7. Найти неопределенный интеграл.

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

8. Найти неопределенный интеграл.

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| 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. $\int x^2 \cos \frac{x}{3} dx.$ |
| 7. $\int x^3 \sin x dx.$ | 8. $\int x^2 \sin 2x dx.$ | 9. $\int x^3 \sin 3x dx.$ |
| 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. $\int x^2 e^{4x} dx.$ | 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. $\int x^2 3^{-2x} dx.$ | 26. $\int x^2 3^{2x} dx.$ | 27. $\int x^2 2^{3x} dx.$ |

$$28. \int x^2 5^{-x} dx. \quad 29. \int x^2 7^x dx. \quad 30. \int x^2 6^{-x} dx.$$

9. Найти неопределенный интеграл.

$$1. \int e^{4x} \sin 4x dx. \quad 2. \int e^x \cos 8x dx. \quad 3. \int e^{2x} \sin 3x dx.$$

$$4. \int e^{2x} \cos 2x dx. \quad 5. \int e^{3x} \sin 2x dx. \quad 6. \int e^{3x} \sin 4x dx.$$

$$7. \int e^{-3x} \cos 2x dx. \quad 8. \int e^{-x} \sin 2x dx. \quad 9. \int e^{-2x} \cos x dx.$$

$$10. \int e^{-2x} \sin x dx. \quad 11. \int e^{\frac{x}{2}} \sin x dx. \quad 12. \int e^{\frac{x}{2}} \cos x dx.$$

$$13. \int e^{\frac{x}{2}} \sin 2x dx. \quad 14. \int e^{-x} \cos 2x dx. \quad 15. \int e^{\frac{x}{2}} \cos 5x dx.$$

$$16. \int \sqrt{2x^2 + 3} dx. \quad 17. \int \sqrt{3x^2 + 5} dx. \quad 18. \int \sqrt{6x^2 - 3} dx.$$

$$19. \int \sqrt{7x^2 - 3} dx. \quad 20. \int \sqrt{5x^2 + 3} dx. \quad 21. \int \sqrt{2x^2 - 7} dx.$$

$$22. \int \sqrt{5 - 2x^2} dx. \quad 23. \int \sqrt{1 - 2x^2} dx. \quad 24. \int \sqrt{7x^2 + 1} dx.$$

$$25. \int \sqrt{8x^2 - 3} dx. \quad 26. \int \sqrt{5 - 5x^2} dx. \quad 27. \int \sqrt{8 - 3x^2} dx.$$

$$28. \int \sqrt{2 - 9x^2} dx. \quad 29. \int \sqrt{5x^2 + 1} dx. \quad 30. \int \sqrt{3x^2 - 5} dx.$$

10. Найти неопределенный интеграл.

$$1. \int x \ln(x-1) dx. \quad 2. \int \arcsin \frac{x}{5} dx. \quad 3. \int x^3 \ln x dx.$$

$$4. \int \operatorname{arctg} 3x dx. \quad 5. \int x \operatorname{arctg} x dx. \quad 6. \int \operatorname{arctg} 2x dx.$$

$$7. \int (1 - \ln x)^2 dx. \quad 8. \int \arccos \frac{x}{2} dx. \quad 9. \int \arcsin 5x dx.$$

$$10. \int \ln^2 x dx. \quad 11. \int x \ln^2 x dx. \quad 12. \int \frac{\ln x}{x^6} dx.$$

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

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

$$19. \int \frac{\ln x}{x^4} dx. \quad 20. \int \frac{\ln x}{x^3} dx. \quad 21. \int x^6 \ln x dx.$$

$$22. \int \arccos \frac{x}{4} dx. \quad 23. \int \arccos x dx. \quad 24. \int x \arccos \frac{x}{2} dx.$$

$$25. \int x \arccos x dx. \quad 26. \int \frac{\arcsin \sqrt{x}}{\sqrt{x}} dx. \quad 27. \int x \arcsin x dx.$$

$$28. \int \arcsin \frac{x}{4} dx. \quad 29. \int \operatorname{arctg} 2x dx. \quad 30. \int x \operatorname{arctg} x dx.$$

11. Найти неопределенный интеграл.

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

$$4. \int \frac{x dx}{\cos^2 7x}. \quad 5. \int x \sin^2 x dx. \quad 6. \int e^x \ln(e^x + 1) dx.$$

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

12. Найти неопределенный интеграл.

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

13. Найти неопределенный интеграл.

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

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

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. $\int \frac{x^2 + 3}{(x^2 - 2x + 10)^3} dx.$
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. $\int \frac{2x^3 + 3}{(x^2 + 4x + 5)^3} dx.$
14. $\int \frac{x^3 - 1}{(x^2 + 6x + 10)^3} dx.$
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. $\int \frac{x^3 + 6}{(x^2 + 6x + 10)^3} dx.$

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

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

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. $\int \sin^6 5x dx.$
7. $\int \sin^6 4x dx.$
8. $\int \cos^2 2x dx.$
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. $\int \cos^4 3x dx.$
16. $\int \sin^4 x \cdot \cos^2 x dx.$
17. $\int \sin^4 x \cdot \cos^4 x dx.$
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. $\int \sin^2 2x \cdot \cos^4 2x dx.$
21. $\int \cos^2 \frac{x}{2} \cdot \sin^4 \frac{x}{2} dx.$
22. $\int \sin^2 x \cdot \cos^2 x dx.$
23. $\int \cos^2 \frac{x}{2} \cdot \sin^2 \frac{x}{2} dx.$
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. $\int \sin^4 2x \cdot \cos^2 2x dx.$
27. $\int \sin^4 3x \cdot \cos^2 3x dx.$
28. $\int \sin^2 x \cdot \cos^4 x dx.$
29. $\int \sin^4 2x \cdot \cos^4 2x dx.$
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. $\int \frac{2 + \operatorname{ctg} x}{3 \operatorname{tg} x - 1} dx.$
3. $\int \frac{dx}{4 \operatorname{ctg} x + \operatorname{tg} x}.$
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. $\int \frac{tgx}{2+tgx} dx.$ 8. $\int \frac{1+ctg^2x}{ctgx(1-ctg^2x)} dx.$ 9. $\int tg^7x dx.$
10. $\int \frac{dx}{tgx-1}.$ 11. $\int \frac{dx}{2tgx+3}.$ 12. $\int \frac{1+tg^2x}{(2-tgx)^3} dx.$
13. $\int \frac{4+ctg2x}{4-ctg2x} dx.$ 14. $\int ctg^6x dx.$ 15. $\int \frac{dx}{3ctgx-1}.$
16. $\int \frac{dx}{ctg2x-3}.$ 17. $\int tg^36x dx.$ 18. $\int ctg^6x dx.$
19. $\int ctg^3x dx.$ 20. $\int ctg^54x dx.$ 21. $\int ctg^53x dx.$
22. $\int tg^53x dx.$ 23. $\int tg^42x dx.$ 24. $\int tg^52x dx.$
25. $\int tg^5x dx.$ 26. $\int tg^43x dx.$ 27. $\int ctg^34x dx.$
28. $\int ctg^35x dx.$ 29. $\int \frac{tgx}{3-tgx} dx.$ 30. $\int \frac{dx}{3tg2x+4}.$

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

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

22. Найти неопределенный интеграл.

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

24*. Найти неопределенный интеграл, используя подстановки Чебышева.

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

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. $\int \frac{dx}{x^3\sqrt{2-x^3}}$
5. $\int \frac{dx}{x^2\sqrt{(1+x^2)^3}}$
6. $\int \frac{dx}{x^2\sqrt{1+x^2}}$
7. $\int \frac{\sqrt{1+x^2}}{x^2} dx$
8. $\int \frac{\sqrt[3]{(1+2x^3)^2}}{x^6} dx$
9. $\int \frac{dx}{\sqrt[4]{1+x^4}}$
10. $\int \frac{\sqrt[5]{1+\sqrt[3]{x}}}{\sqrt[5]{x^7}} dx$
11. $\int \frac{\sqrt[3]{1+\sqrt[2]{x^3}}}{x^2} dx$
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. $\int \frac{dx}{x^2\sqrt[3]{(5+x^3)^5}}$
17. $\int \frac{\sqrt[4]{1+x^4}}{x^{10}} dx$
18. $\int \frac{\sqrt[4]{1+x^4}}{x^{14}} dx$
19. $\int \frac{dx}{x^4\sqrt{(1+x^2)^3}}$
20. $\int \frac{\sqrt[3]{1+x^3}}{x^8} dx$
21. $\int \frac{\sqrt{1+x^3}}{\sqrt{x^{17}}} dx$
22. $\int \frac{dx}{x^{11.5}\sqrt{1+x^3}}$
23. $\int \frac{\sqrt{1+x^4}}{x^{15}} dx$
24. $\int \frac{\sqrt{1+x^5}}{x^{18.5}} dx$
25. $\int \frac{\sqrt[3]{(1+x^{1.5})^2}}{x^8} dx$
26. $\int \frac{dx}{x^{4.5}\sqrt[3]{(1+x^{1.5})^2}}$
27. $\int \frac{\sqrt[3]{(1+\sqrt{x^3})^2}}{x^5} dx$
28. $\int \frac{dx}{\sqrt{x^{15}}\sqrt[3]{(1+\sqrt{x^3})^2}}$
29. $\int \sqrt[3]{x}(1-x^2)^{\frac{5}{3}} dx$
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. $\int \frac{x^2-2x}{\sqrt{x^2-2x-1}} dx$

$$\begin{array}{lll}
19. \int \frac{x^2 + 4x - 2}{\sqrt{x^2 + 4x - 1}} dx & 20. \int \frac{x^3 dx}{\sqrt{x^2 + 4x + 5}} & 21. \int \frac{2x^3 - 2x - 3}{\sqrt{x^2 + 2x + 2}} dx \\
22. \int \frac{dx}{(x^2 - 3x)\sqrt{x^2 - 3x}} & 23. \int \frac{dx}{(9x^2 + x)\sqrt{9x^2 + x}} & 24. \int \frac{dx}{(4x^2 - 3x)\sqrt{4x^2 - 3x}} \\
25. \int \frac{\sqrt{4x^2 - 3x}}{(x-1)^2} dx & 26. \int \frac{\sqrt{9x^2 + 8x}}{(2x-1)^2} dx & 27. \int \frac{\sqrt{x^2 - 2x}}{(x+2)^2} dx \\
28. \int \frac{x^2 - 3x + 1}{\sqrt{9x^2 - 4x}} dx & 29. \int \frac{3x^2 + x - 4}{\sqrt{x^2 - 9x}} dx & 30. \int \frac{1 + x - 2x^2}{\sqrt{x^2 + x}} dx
\end{array}$$

27*. Найти неопределенный интеграл, используя подстановки Эйлера.

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

28*. Найти неопределенный интеграл, используя подстановки Эйлера.

$$\begin{array}{lll}
1. \int \frac{\sqrt{x^2 + x - 6}}{x^2} dx & 2. \int \frac{\sqrt{x^2 - 3x + 2}}{x^2} dx & 3. \int \frac{\sqrt{x^2 + 3x - 4}}{x^2} dx \\
4. \int \frac{dx}{x\sqrt{2 + x - x^2}} & 5. \int \frac{\sqrt{4x^2 + x - 5}}{x} dx & 6. \int \frac{\sqrt{x^2 + 2x - 3}}{x} dx
\end{array}$$

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

Таблица вариантов

В	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
1	15	6	9	17	26	9	21	18	6	27	2	13	9	13	4	8	8	23	16	16	6	9	17	26	9	7	24	8
2	17	15	14	10	4	9	24	8	27	28	16	9	3	14	4	12	12	2	23	2	14	10	4	9	24	15	6	7
3	28	23	2	22	25	14	5	21	23	25	29	20	20	15	4	28	7	26	10	17	25	14	5	21	23	18	6	13
4	18	3	24	6	28	23	3	27	2	12	9	24	4	23	29	3	29	29	22	20	6	9	17	26	9	26	10	18
5	10	17	21	24	8	25	19	30	14	26	30	23	12	22	22	24	15	27	21	15	14	10	4	9	24	15	6	6
6	2	21	18	3	14	5	18	9	3	1	7	16	28	18	30	16	30	26	10	11	18	3	14	5	18	5	21	16
7	22	24	17	19	13	14	28	18	21	16	23	22	21	12	19	2	22	7	7	12	19	13	14	28	18	14	5	23
8	11	8	13	30	12	24	7	20	19	10	15	18	15	4	23	4	24	4	29	25	30	12	24	7	20	14	15	5
9	6	11	22	7	19	7	26	20	22	18	25	5	12	10	13	5	2	23	2	6	25	14	5	21	23	15	6	25
10	4	9	9	27	8	29	28	17	20	17	5	14	10	19	8	21	28	1	12	29	9	9	27	8	29	14	20	10
11	16	10	1	12	26	21	7	17	23	21	21	19	23	3	8	5	7	29	24	22	1	12	26	21	7	14	16	27
12	12	14	1	12	16	6	11	23	14	29	9	4	30	15	26	29	19	13	3	17	18	3	14	5	18	15	6	29
13	23	28	23	16	5	18	27	14	25	5	13	27	4	10	22	5	23	24	4	14	30	12	24	7	20	14	21	4
14	2	27	21	22	22	14	13	26	27	20	9	2	7	9	9	26	10	23	2	28	9	9	27	8	29	18	6	17
15	18	12	12	22	24	4	14	9	16	3	3	21	24	14	7	3	27	17	13	12	19	13	14	28	18	26	10	11
16	11	6	9	27	7	13	26	21	25	15	17	30	12	14	28	16	21	5	4	23	1	12	26	21	7	5	21	3
17	8	8	3	6	12	10	5	30	3	4	22	21	27	28	30	29	9	9	19	27	9	9	27	8	29	15	6	9
18	12	9	19	2	3	28	16	20	29	3	19	23	10	13	30	18	19	15	23	19	3	28	16	20	29	14	13	14
19	7	8	1	20	16	19	21	16	18	11	20	24	21	12	12	5	13	25	8	15	12	9	19	2	3	13	5	20
20	14	3	5	4	2	21	13	21	28	17	11	29	3	8	14	17	27	29	28	29	30	12	24	7	20	11	15	24
21	26	14	1	7	23	17	19	21	7	14	30	27	11	26	20	11	24	26	8	27	1	12	26	21	7	14	21	2
22	8	3	28	16	20	29	29	18	29	2	11	14	21	8	22	3	9	15	21	14	22	3	28	16	20	14	24	22
23	5	22	28	6	8	22	1	1	18	6	15	25	29	7	24	14	25	18	27	11	3	28	16	20	29	15	6	30
24	23	22	19	27	27	4	20	14	23	29	17	2	27	11	29	9	1	13	4	14	19	13	14	28	18	4	15	26
25	22	22	29	15	23	5	3	9	13	11	10	13	12	2	18	25	29	25	19	29	3	28	16	20	29	18	6	28
26	20	28	23	19	23	21	14	30	26	26	23	28	12	23	9	7	20	13	25	25	22	29	15	23	3	26	10	19
27	16	12	9	15	13	11	19	18	29	4	15	30	4	7	25	12	8	15	2	8	28	23	19	23	21	5	21	12
28	20	26	19	25	27	15	8	21	10	19	20	15	22	18	2	30	25	12	25	17	3	28	16	20	29	1	25	15
29	20	8	15	23	30	9	30	24	6	2	30	12	11	14	6	21	24	25	3	30	3	28	16	20	29	14	12	21
30	13	10	11	15	17	23	1	22	19	23	8	10	24	2	3	29	25	14	20	28	22	29	15	23	5	12	15	1
31	29	5	5	13	16	9	7	21	26	21	9	24	23	19	10	1	3	20	4	21	28	23	19	23	21	17	23	20
32	5	30	14	23	16	6	25	30	4	11	24	19	23	13	6	28	9	14	24	3	25	4	13	13	14	15	21	12
33	19	17	27	19	28	16	14	30	13	30	5	27	11	2	4	18	5	17	3	11	22	29	15	23	12	15	6	11
34	21	22	7	21	6	1	2	17	4	21	1	4	20	3	24	30	21	5	23	5	28	23	19	23	21	14	17	19
35	12	8	23	15	2	25	4	13	13	14	5	14	4	28	16	25	19	18	5	6	29	13	18	9	17	14	5	28
36	8	29	13	18	9	17	14	6	24	2	10	5	4	27	9	4	19	21	25	12	10	13	11	11	26	18	6	18
37	15	11	26	20	5	4	28	25	18	6	1	21	6	19	28	10	4	5	27	7	21	25	12	10	13	5	21	10
38	13	21	10	14	2	1	24	28	12	5	9	26	13	23	14	30	2	9	17	18	25	4	13	13	14	13	25	29
39	7	2	2	8	20	23	10	22	19	29	15	26	6	11	24	3	18	18	25	26	29	13	18	9	17	14	17	9
40	28	15	10	13	11	11	26	28	25	30	12	30	26	10	5	17	14	21	3	2	10	13	11	11	26	8	29	17
41	2	21	30	17	2	14	9	26	16	26	24	2	15	10	5	7	11	20	24	10	21	25	12	10	13	14	12	16
42	23	11	1	8	13	1	15	20	8	18	18	16	5	30	7	18	7	10	15	7	29	13	18	9	17	1	15	15
43	8	29	10	7	29	17	20	28	21	15	16	4	14	1	23	8	30	4	29	17	10	13	11	11	26	16	21	27
44	16	25	15	16	30	6	21	20	1	21	20	17	13	14	4	15	25	25	2	20	25	4	13	13	14	15	6	8
45	9	30	2	20	9	30	18	1	5	11	7	12	1	22	6	14	17	17	7	22	21	25	12	10	13	7	13	7
46	20	21	24	8	20	2	20	22	20	21	14	13	26	30	8	12	3	20	19	2	8	20	2	20	22	12	9	26
47	2	13	21	9	6	12	15	25	21	8	20	21	20	23	15	6	16	1	29	3	23	19	16	8	20	26	10	6
48	20	22	10	26	1	26	20	6	22	25	20	15	15	30	5	3	19	19	20	2	15	15	18	27	21	5	21	5
49	20	29	9	28	24	14	5	26	1	10	9	28	19	3	8	17	21	3	2	29	23	11	1	8	13	11	23	25
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