

Степень с рациональным показателем.

Представить выражение в виде степени:

1. $\sqrt[6]{125}$;

2. $\sqrt[9]{128}$;

3. $\sqrt[7]{243}$;

4. $\sqrt[5]{\frac{27}{64}}$;

5. $\sqrt[9]{\frac{125}{27}}$;

6. $\sqrt[4]{\frac{49}{36}}$;

7. $\sqrt[3]{512}$;

8. $\sqrt{\frac{81}{16}}$;

9. $\sqrt{0,027}$;

10. $\sqrt[7]{0,0016}$;

11. $\sqrt[8]{0,04}$.

Привести указанные выражения к виду $\sqrt[n]{a^m}$:

12. $\left(\frac{27}{8}\right)^{\frac{1}{7}}$;

13. $27^{\frac{1}{4}}$;

14. $\left(\frac{2}{5}\right)^{-\frac{2}{3}}$;

15. $\left(\frac{125}{27}\right)^{-\frac{4}{9}}$;

16. $125^{-\frac{1}{4}}$;

17. $3^{\frac{3}{4}}$;

18. $128^{\frac{2}{3}}$;

19. $256^{\frac{1}{6}}$

20. $64^{-\frac{7}{6}}$;

21. $64^{\frac{1}{7}}$;

22. $\left(\frac{64}{27}\right)^{\frac{1}{5}}$;

23. $\left(\frac{25}{49}\right)^{-\frac{2}{5}}$;

24. $\left(\frac{81}{64}\right)^{\frac{3}{8}}$.

Вычислить:

25. $2^{\frac{1}{3}} \cdot 2^{-\frac{4}{3}};$

26. $6^{\frac{1}{4}} \cdot 6^{\frac{3}{4}};$

27. $\frac{16^{2/3}}{16^{1/6}};$

28. $\frac{64^3}{32^3};$

29. $\frac{350^2}{420^2};$

30. $\frac{136^2}{17^2};$

31. $81^{\frac{3}{4}};$

32. $2 \cdot 25^{-\frac{1}{2}};$

33. $(3^{-2})^3;$

34. $2^2 \cdot 5^2;$

35. $(2^{0,5})^{-0,5} \cdot (0,5)^{-1,25};$

36. $(10^3)^4 \cdot 10^{-12};$

37. $16^2 \cdot 2^{-6};$

38. $\frac{0,001}{10^{-5}};$

39. $2 \cdot 64^{-\frac{1}{3}};$

40. $\left(\frac{27}{64}\right)^{1/3};$

41. $15^3 \cdot 225^{-1,5};$

42. $15 \cdot (75)^{-1};$

43. $\left(-\frac{1}{3}\right)^{-2} \cdot 9^2;$

44. $5^3 \cdot \left(\frac{1}{15}\right)^3;$

45. $\sqrt[3]{8 \cdot 27};$

46. $\sqrt[3]{5} \cdot \sqrt[3]{25};$

47. $\sqrt[5]{27} \cdot \sqrt[5]{9};$

48. $\sqrt[4]{32} \cdot \sqrt[4]{8};$

49. $\sqrt[7]{32} \cdot \sqrt[7]{4};$

50. $\sqrt{28} \cdot \sqrt{7};$

51. $\sqrt{54} \cdot \sqrt{6};$

52. $\frac{\sqrt{8}}{\sqrt{2}};$

53. $\sqrt{\frac{16}{625}};$

54. $\sqrt{\frac{121}{169}};$

55. $\frac{\sqrt[3]{128}}{\sqrt[3]{2}};$

56. $\frac{\sqrt[3]{81}}{\sqrt[3]{3}};$
57. $\frac{\sqrt{5}}{\sqrt{500}};$
58. $\frac{\sqrt{121 \cdot 169}}{\sqrt{169}};$
59. $\frac{32^{0,42} \cdot 4^{0,6}}{16^{0,3} \cdot 2^{0,1}};$
60. $14^{1/3} \cdot (49 \cdot 4)^{1/3};$
61. $\frac{12^{1/2}}{7^{2/3} \cdot 8^{1/2}} \cdot \frac{3^{1/2} \cdot 7^{5/3}}{8^{-1/6}};$
62. $8^{2/3} - 16^{1/4} + 9^{1/2};$
63. $25^{1,5} + (0,25)^{-0,5} - 81^{0,75};$
64. $4^{1/2} \cdot 16^{3/4} \cdot 16^{-3/4} \cdot 32^{-4/5} \cdot 2^3;$
65. $\frac{(36^{2/3})^{1/2} \cdot (4^{1/3})^{1/2} \cdot 36^{1/6}}{2^{4/3}};$
66. $27^{1/3} \cdot 81^{3/4} \cdot \left(\frac{27}{8}\right)^{-1/3} - \frac{2}{3};$
67. $\frac{(0,64)^{0,5} \cdot 7^0 \cdot (0,027)^{2/3} \cdot 16^0}{9^{-0,5} \cdot (0,25)^{-1,5}}.$

Упростить:

$$68. \left(\sqrt[5]{a^4}\right)^3;$$

$$69. \left(\sqrt[5]{a^{\frac{4}{5}}}\right)^{\frac{3}{2}};$$

$$70. \frac{a^{2/5}}{a^{12/5}};$$

$$71. \left(\sqrt{a \cdot \sqrt[3]{a^2 \cdot b}}\right)^4;$$

$$72. \left(\sqrt[4]{a \cdot \sqrt{b}}\right)^6;$$

$$73. a^{2/3} \cdot \sqrt[3]{a^4};$$

$$74. a^{-1/2} \cdot \sqrt{a^3};$$

$$75. \frac{a^{5/4}}{\sqrt[4]{a}};$$

$$76. \frac{x^{1/3} \cdot x^{-2/3}}{x^{-4/3}};$$

$$77. \frac{x^{5/8} \cdot x^{1/4}}{x^{-1/8}};$$

$$78. \frac{x^{2/3} \cdot x^{-3/2}}{x^{5/6}};$$

$$79. \frac{\sqrt[4]{x^3} \cdot \sqrt[3]{x}}{x^{1/3}};$$

$$80. \frac{x^{4/3} \cdot x^{-10/9}}{x^{1/3} \cdot x^{-5/18} \cdot x^{1/6}};$$

$$81. a^{1,4} \cdot a^{-0,3} \cdot a^{2,9};$$

$$82. a^{2/7} \cdot \sqrt[7]{a^5};$$

$$83. \frac{x^{1,9} \cdot x^{-0,6}}{x^{-1,7}};$$

$$84. a^{1/2} \cdot a^{7/6} \cdot a^{-2/3};$$

$$85. \frac{x^{3/2} + x - x^{-5/6}}{x};$$

$$86. \frac{x + 4x^5 + \sqrt{x} - x^{-1/2}}{x^5};$$

$$87. \frac{a^{10/3} \cdot b^{2/3}}{a^{3/2} \cdot b^{3/4}};$$

$$88. \frac{(a^2 \cdot b^{1/2})^{1/4}}{a^{1/2} \cdot b^{9/8}};$$

$$89. a^{-2} \cdot a^{11/6} \cdot b^{-1/12};$$

$$90. \frac{a^{3/4} + a^{1/2} \cdot b^{1/4}}{a^{1/4} + b^{1/4}};$$

$$91. (1 - x^{0,5})^2 + 2x^{0,5};$$

$$92. (y^{0,5} - x^{0,5})^2 \cdot (y^{0,5} + x^{0,5});$$

$$93. (y^{1/3} - 1)^2 \cdot (y^{2/3} + y^{1/3} + 1);$$

$$94. \frac{x^{1/3} + x^{-4/3} + x^2 - \sqrt{x^3}}{x^3};$$

$$95. \frac{(\sqrt[5]{a^{4/3}})^{3/2} \cdot (\sqrt{a \cdot \sqrt[3]{a^2 \cdot b}})^4}{(\sqrt[5]{a^4})^3 \cdot (\sqrt[4]{a \cdot \sqrt{b}})^6}.$$

Сократить дробь:

$$96. \frac{100^n}{2^{2n+1} \cdot 5^{2n-2}};$$

$$103. \frac{a-b}{a^{0,5} + b^{0,5}};$$

$$97. \frac{36^n}{2^{2n+2} \cdot 3^{2n-3}};$$

$$104. \frac{a - 2a^{1/2}}{a^{3/2} - 2a};$$

$$98. \frac{4 \cdot 18^n}{2^{n+1} \cdot 3^{2n-1}};$$

$$105. \frac{4x - y}{2x + x^{0,5} \cdot y^{0,5}};$$

$$99. \frac{2^{2n-1} \cdot 3^{n+1}}{6 \cdot 12^n};$$

$$106. \frac{a^{4/3} \cdot x + a \cdot x^{4/3}}{\sqrt[3]{a} + \sqrt[3]{x}};$$

$$100. \frac{10 \cdot 2^n}{2^{n+1} + 2^{n-1}};$$

$$107. \frac{y - 16y^{0,5}}{5y^{0,25} + 20};$$

$$101. \frac{5^{n+1} - 5^{n-1}}{2 \cdot 5^n};$$

$$108. \frac{x^{3/2} - y^{3/2}}{x + x^{1/2} \cdot y^{1/2} + y};$$

$$102. \frac{x + 7x^{1/2}}{x^{1/2} + 7};$$

$$109. \frac{m+n}{m^{1/3} + n^{1/3}}.$$

Упростить:

$$110. \frac{\sqrt[6]{a^5} \cdot \sqrt[3]{a^{-1}}}{a^{-\frac{2}{9}}};$$

$$111. \left(a^{\frac{1}{3}} + x^{\frac{1}{3}}\right)^{-1} \cdot (a-x) - \frac{a+x}{a^{\frac{1}{3}} + x^{\frac{1}{3}}}$$

$$112. \left(\frac{a^2 - b^2}{a^{\frac{3}{2}} - a \cdot b^{\frac{1}{2}}} - \frac{a-b}{a^{\frac{1}{2}} - b^{\frac{1}{2}}}\right) \cdot \frac{a}{b \cdot \left(a^{\frac{1}{2}} + b^{\frac{1}{2}}\right)};$$

$$113. \frac{1}{\left(a^{\frac{2}{3}} + b^{\frac{2}{3}}\right)^{-1}} + \frac{a+b}{a^{\frac{1}{3}} + b^{\frac{1}{3}}} - \frac{a-b}{a^{\frac{1}{3}} - b^{\frac{1}{3}}}$$

Выполнить арифметические действия:

$$114. \frac{3^{-1} - \left(\frac{2}{3}\right)^{-2}}{2 - \left(\frac{3}{4}\right)^2} \cdot \left(5^0 - \frac{1}{6}\right)^{-1} + 2 \cdot 10^{-1};$$

$$115. (1,5)^3 \cdot (2,25)^{-1,5} \cdot (0,75)^{-1} \cdot \left[\left(-\frac{1}{3}\right)^{-2} + \left(-\frac{1}{2}\right)^{-1} - \left(2\frac{3}{7}\right)^0\right]$$

ОТВЕТЫ:

1. $5^{1/2}$; 2. $2^{7/9}$; 3. $3^{5/7}$; 4. $\left(\frac{3}{4}\right)^{3/5}$; 5. $\left(\frac{5}{3}\right)^{1/3}$; 6. $\left(\frac{7}{6}\right)^{1/2}$; 7. 2^3 ; 8. $\left(\frac{3}{2}\right)^2$;
9. $(0,3)^{3/2}$; 10. $(0,2)^{4/7}$; 11. $(0,2)^{1/4}$; 12. $\sqrt[7]{\left(\frac{3}{2}\right)^3}$; 13. $\sqrt[4]{3^3}$; 14. $\sqrt[3]{\left(\frac{5}{2}\right)^2}$;
15. $\sqrt[3]{\left(\frac{3}{5}\right)^4}$; 16. $\sqrt[4]{\left(\frac{1}{5}\right)^3}$; 17. $\sqrt[4]{3^3}$; 18. $\sqrt[3]{2^{14}}$; 19. $\sqrt[3]{2^4}$; 20. $\sqrt{\left(\frac{1}{4}\right)^7}$; 21. $\sqrt[7]{4^3}$;
22. $\sqrt[5]{\left(\frac{4}{3}\right)^3}$; 23. $\sqrt[5]{\left(\frac{7}{5}\right)^4}$; 24. $\sqrt[4]{\left(\frac{9}{8}\right)^3}$; 25. $\frac{1}{2}$; 26. 6; 27. 4; 28. 8; 29. $\frac{25}{36}$;
30. 64; 31. 27; 32. $\frac{2}{5}$; 33. $\frac{1}{729}$; 34. 100; 35. 2; 36. 1; 37. 4; 38. 100;
39. $\frac{1}{2}$; 40. $\frac{3}{4}$; 41. 1; 42. $\frac{1}{5}$; 43. 729; 44. $\frac{1}{27}$; 45. 6; 46. 5; 47. 3; 48. 4;
49. 2; 50. 14; 51. 18; 52. 2; 53. $\frac{4}{25}$; 54. $\frac{11}{13}$; 55. 4; 56. 3; 57. $\frac{1}{10}$; 58. 11;
59. 4; 60. 14; 61. 21; 62. 5; 63. 118; 64. 1; 65. 3; 66. $\frac{160}{3}$; 67. 0,027;
68. $a^{12/5}$; 69. $a^{6/25}$; 70. a^{-2} ; 71. $a^{4/3} \cdot b^{2/3}$; 72. $a^{3/2} \cdot b^{3/4}$; 73. a^2 ; 74. a ;
75. a ; 76. x ; 77. x ; 78. 1; 79. \sqrt{x} ; 80. 1; 81. a^4 ; 82. a ; 83. x^3 ; 84. a ;
85. $x^{1/2} + 1 - x^{-11/6}$; 86. $x^{1/4} + 4 + x^{-9/2} - x^{-11/2}$; 87. $a^{11/6} \cdot b^{-1/12}$; 88. $\frac{1}{b}$;
89. $a^{-1/6}$; 90. $a^{1/2}$; 91. $1+x$; 92. $x-y$; 93. $y-1$; 94. $x^{-8/3} + x^{-13/3} + \frac{1}{x} - x^{-3/2}$;
95. $a^{1/30} \cdot b^{-1/12}$; 96. $\frac{25}{2}$; 97. $\frac{27}{4}$; 98. 6; 99. $\frac{1}{4}$; 100. 4; 101. $\frac{12}{5}$; 102. \sqrt{x} ;
103. $a^{0,5} - b^{0,5}$; 104. $\frac{1}{\sqrt{a}}$; 105. $2 - \sqrt{\frac{y}{x}}$; 106. $a \cdot x$; 107. $\frac{\sqrt{y}}{5}(\sqrt{y} - 4)$;
108. $\sqrt{x} - \sqrt{y}$; 109. $m^{2/3} - (m \cdot n)^{1/3} + n^{2/3}$; 110. a ; 111. $-\frac{2x}{a^{1/3} + x^{1/3}}$; 112. 1;
113. $(a^{1/3} - b^{1/3})^2$; 114. $\frac{106}{115}$; 115. 8.