**INSTITUCIÓN EDUCATIVA LA SAGRADA FAMILIA J.M.**

EJERCICIOS TEMA: RADICACIÓN ALGEBRA GRADO 9 PERÍODO 1

**NIVEL COMUNICACIÓN: Encontrar las raíces. Usa las propiedades de la radicación y relaciona con la respuesta.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 1 | $$\sqrt{\frac{100}{16}}$$ | $$\left(\right)2\sqrt{5}$$ | 7 | $$\sqrt[3]{432}$$ | $$\left(\right)\frac{1}{3}$$ |
| 2 | $$\sqrt[3]{\frac{8}{27}}$$ | $$\left(\right)8\sqrt[3]{4}$$ | 8 | $$\sqrt[3]{-\frac{125}{216}}$$ | $$\left(\right)6\sqrt[3]{2}$$ |
| 3 | $$4\sqrt{54}$$ | $$\left(\right)-\frac{5}{6}$$ | 9 | $$\frac{1}{2}\sqrt[3]{256}$$ | $$\left(\right)\frac{2}{3}$$ |
| 4 | $$\sqrt{1-\frac{8}{9}}$$ | $$\left(\right)6$$ | 10 | $$\frac{4}{3}\sqrt[3]{864}$$ | $$\left(\right)\frac{4}{5}$$ |
| 5 | $$\frac{\sqrt[3]{128}}{\sqrt[3]{250}}$$ | $$\left(\right)2$$ | 11 | $$\frac{1}{4}\sqrt[3]{512}$$ | $$\left(\right)\frac{5}{2}$$ |
| 6 | $$\sqrt[3]{24}\sqrt[3]{9}$$ | $$\left(\right)2\sqrt[3]{4}$$ | 12 | $$\sqrt{20}$$ | $$\left(\right)12\sqrt{6}$$ |

**NIVEL RAZONAMIENTO: Escribir las expresiones en forma radical y hallar las respectivas raíces.**

13. $25^{\frac{1}{2}}$ 14. $4^{-\frac{1}{2}}$ 15. $\left(-8\right)^{\frac{1}{3}}$ 16. $16^{-\frac{3}{2}} $ 17. $(-36)^{\frac{1}{2}}$ 18. $\left(x^{3}y^{6}\right)^{\frac{1}{3}}$ 19. $a^{\frac{2}{5}}a^{\frac{3}{5}}$ 20. $a^{\frac{2}{3}}b^{\frac{4}{3}}c^{\frac{1}{3}}$

21.$ \left(-243m^{15}n^{35}\right)^{-\frac{1}{5}}$ 22.$ \left(32a^{10}b^{20}\right)^{-\frac{2}{5}} $ 23. $\left(\frac{1}{64}\right)^{-\frac{1}{6}}$

**Encontrar las raíces:**

24. $\left(2\sqrt[4]{81a}\right)^{2}$ 25. $\sqrt[4]{\frac{81x^{12}}{16y^{6}}}$ 26. $\sqrt{80r^{3}s^{7}}$ 27. $\sqrt[3]{27a^{12}b^{6}c^{3}}$

28. $\frac{X^{3}Z}{2Y^{2}}\sqrt[4]{32X^{16}Y^{25}Z^{-14}} $ 29. $\frac{3X}{Y}\sqrt[3]{54X^{3}Y^{6}Z^{7} }$ 30. $\frac{1}{3}\sqrt{81V^{5}W^{9}}$ 31. $ \sqrt{\frac{27a^{2}b^{18}c^{9}}{144b^{4}c^{3}d^{8}}}$ 32. $\sqrt{50m^{4}n^{8}}$ 33. $\sqrt[5]{\frac{-32m^{20}}{n^{10}}}$ 34. $5a^{2}b\sqrt[3]{128a^{4}b^{15}c^{17}}$ 35. $\frac{3a^{2}b}{4}\sqrt[3]{-\frac{64a^{5}}{27b^{6}}}$ 36. $\sqrt[3]{\sqrt[4]{8 . 192a^{12}b^{28}c^{32}}}$ 37. $\frac{\sqrt{9\sqrt{16}}}{\left(\sqrt[3]{\sqrt[7]{8a^{3}}}\right)^{7}}$ 38. $\frac{5}{2}\sqrt{\frac{12m^{6}}{100n^{5}}}$ 39. $\left(5\sqrt{a^{2}b}\right)^{2}$

40. $\sqrt[3]{\sqrt{729a^{12}}}$ 41. $\sqrt{x^{2}+2xy+y^{2}}$ 42. $\sqrt{\frac{x^{2}}{y^{2}}+\frac{y^{2}}{x^{2}}-2}$ 43. $\sqrt{\frac{81a^{6}}{100b^{6}c^{8}}}$

**Escribir bajo un solo radical cada expresión:**

44. $\sqrt{5\sqrt{5}}$ 45. $\sqrt[4]{\sqrt{8ab}} $ 46. $\sqrt[5]{\sqrt[6]{h^{2}k^{3}}}$ 47. $\sqrt{2\sqrt{2\sqrt{2}}}$ 48. $\sqrt{\sqrt{2a}}$ 49. $\sqrt[x]{\sqrt[y]{6}}$

50. $\sqrt{\frac{m}{n}\sqrt{\frac{n}{m}}\sqrt[3]{\frac{n}{m}}\sqrt[4]{\frac{n}{m}}}$ 51. $\frac{3x}{y}\sqrt[3]{54x^{3}y^{6}z^{7}}$ 52. $\frac{\sqrt[3]{4}\sqrt[3]{2}}{\sqrt[3]{5}\sqrt[3]{6}}$ 53. $\sqrt{2}\sqrt{a}\sqrt{b}$ 54. $\frac{\sqrt{2a^{4}}}{\sqrt{6a^{3}}}$

55. $5a^{2}b\sqrt[3]{128a^{4}b^{15}c^{17 }}$ 56. $\frac{\sqrt{x^{2}y^{2}}\sqrt{x^{3}}\sqrt{y^{5}}}{\sqrt{x^{4}}\sqrt{y^{2}}}$ 57. $\sqrt[3]{(2+k)\sqrt{2+k}}$ 58.$\sqrt{\frac{1}{p}\sqrt{p\sqrt{p}}}$

**Introducir todos los factores dentro del radical:**

59. $\frac{4a^{4}c^{8}}{5b^{5}}\sqrt[3]{\frac{2a^{2}}{b}}$ 60. $2\sqrt{3a^{2}}$ 61. $3x\sqrt[3]{x^{2}}$ 62. $2a^{3}b^{2}\sqrt[3]{a^{2}b}$ 63. $2p^{5}q\sqrt[4]{3p^{3}q}$

64. $7y^{5}z^{4}\sqrt{2z}$ 65. $\frac{1}{4}\sqrt{2a}$ 66. $k^{-5}m^{6}n^{7}\sqrt[4]{k^{-2}m^{-1}n^{-2}}$ 67. $\frac{3g^{2}}{2h^{12}}\sqrt{\frac{2g}{h}}$

68. $-\frac{1}{3}r^{4}s^{5}\sqrt[3]{6rs^{2} }$ 69. $4\sqrt{6}$ 70. $\frac{3}{4}x^{2}y^{-8}z^{-2}\sqrt[5]{5x^{3}y^{-4}}$ 71. $\frac{6a^{3}}{b^{8}}\sqrt{\frac{a}{3}}$

**Resolver las siguientes operaciones:**

72. $8\sqrt{5}-7\sqrt{5}-6\sqrt{5}+12\sqrt{5}+21\sqrt{5}$ 73. $ \sqrt{36a^{2}}+\sqrt{64a^{2}}+\sqrt{81a^{2}}$

74. $\frac{3}{4}\sqrt{5}+\frac{8}{4}\sqrt{5}-\frac{6}{4}\sqrt{5}+\frac{1}{2}\sqrt{5}+\frac{3}{2}\sqrt{5}$ 75.$-14\sqrt{3}+\sqrt{2}-13\sqrt{3}+15\sqrt{2}-24\sqrt{3}-4\sqrt{2}$

76. $\frac{2}{3}\sqrt{3}-\frac{1}{4}\sqrt{3}-\frac{2}{5}\sqrt{3}+\frac{1}{4}\sqrt{2}+\frac{2}{3}\sqrt{2}-\frac{3}{2}\sqrt{2}$ 77. $\sqrt{96}-\sqrt{54}+\sqrt{24}$

78. $-\sqrt[3]{6}-6\sqrt[3]{6}+5\sqrt[3]{6}+\frac{1}{2}\sqrt[3]{6}+\frac{2}{3}\sqrt[3]{6}-\frac{1}{5}\sqrt[3]{6}$ 79. $13-\frac{\sqrt{48}}{4}-\frac{3}{2}\sqrt{18}+12-\frac{1}{3}\sqrt{\frac{1}{12}}$

80. $\sqrt{196a^{3}+}\sqrt{144a^{3}}-8\sqrt{4a^{3}}$ 81. $\frac{1}{2}\sqrt[3]{81}-\frac{3}{4}\sqrt[3]{192}+\frac{2}{3}\sqrt[3]{384 }-\frac{1}{3}\sqrt[3]{48 }$

82. $\frac{2}{3}\sqrt{486}-\frac{3}{8}\sqrt{600}-\sqrt{320}-\frac{1}{6}\sqrt{180}$ 83. a$\sqrt{27}-\sqrt{45a^{2}}+a\sqrt{80}+\sqrt{20a^{2}}-a\sqrt{75}$

84. $4\sqrt{3}-5\sqrt{12}+\sqrt{27}+\sqrt{75}-\sqrt{147}$ 85. $3\sqrt{48}+2\sqrt{243}-4\sqrt{63}-\sqrt{75}+\sqrt{175}$

86. $-3\sqrt[3]{16}-2\sqrt[3]{24}+5\sqrt[3]{54}-\sqrt[3]{375}$

**Realizar las siguientes divisiones:**

87. $4\sqrt{6}÷2\sqrt{3}$ 88. $\frac{1}{2}\sqrt{3xy} ÷\frac{3}{4}\sqrt{x}$ 89. $\sqrt{75a^{2}b^{3}}÷5\sqrt{3ab}$ 90. $\sqrt[5]{x^{3}y}÷\sqrt[5]{\frac{1}{x^{2}}}$

91. $4\sqrt[3]{54}÷\sqrt[3]{2}$ 92. $5\sqrt[4]{81a^{5}}÷10\sqrt{9a^{4}b^{6}}$ 93. $2\sqrt[4]{1024a^{7}b^{8}}÷\sqrt{8a^{5}b^{7}}$

94. $\sqrt[3]{x^{6}y^{12}}÷\sqrt[3]{x^{3}y }$ 95. $\frac{2b}{3}\sqrt[3]{x^{2}}÷\frac{3}{b}\sqrt[3]{\frac{x}{2} }$ 96. $\frac{5}{6}\sqrt{\frac{1}{2}}÷\frac{12}{10}\sqrt{2}$

97. $3\sqrt[3]{16a^{5}}÷4\sqrt[3]{2a^{2}}$ 98. $4\sqrt[4]{16x^{3}}÷12\sqrt[4]{32x^{5}}$ 99. $ \frac{3a}{b}\sqrt[3]{\frac{25}{a}}÷\sqrt[3]{\frac{a}{5}}$

100. $\frac{5x^{2}}{12}\sqrt[5]{\frac{x^{7}}{3} }÷\sqrt[5]{\frac{x}{81}}$