MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

FACTORIZATION OF ALGEBRAIC EXPRESSIONS

Others

1. Factorize the following expressions : $x^4 + 4x^2 + 3$

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2. Factorize : $27a^3 + \dfrac{1}{64b^3} + \dfrac{27a^2}{4b} + \dfrac{9a}{16b^2}$ `

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3. Simplify: $(x + y)^3 - (x - y)^3 - 6y(x^2 - y^2)$

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4. Prove that : $\dfrac{0.87 \times 0.87 \times 0.87 + 0.13 \times 0.13 \times 0.13}{0.87 \times 0.87 - 0.87 \times 0.13 + 0.13 \times 0.13} = 1$

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5. Factorize each of the following expressions : $54x^6y + 2x^3y^4$, $8x^2y^3 - x^5$

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6. Factorize each of the following expressions : $x^{12} - y^{12}$ (ii) $x^9 - y^9$

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7. Factorize : (i) $x^3 + 3x^2 + 3x - 7$

(ii) $x^3 - 3x^2 + 3x + 7$

(iii) $x^6 - 7x^3 - 8$

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8. Factorize : (i) $(x+1)^3$ (ii) $(x+1)^3 + (x-1)^3$ (iii) $8(x+y)^3 - 27(x-y)^3$

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9. Factorize each of the following expressions : (i) $a^6 - b^6$ (ii) $a^6 + b^6$ (iii) $a^7 + ab^6$

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10. Factorize each of the following expressions by splitting the middle term: $9(x - 2y)^2 - 4(x - 2y) - 13$

11. What are the possible expression for the dimensions of a cuboid whose value is $2ky^2 + 6ky - 20k$

12. If $p = 2 - a$, prove that $a^3 + 6ap + p^3 - 8 = 0$

13. Factorize the following expression : $(2x - 3y)^3 + (4z - 2x)^3 + (3y - 4z)^3$

14. Factorize : $\left(a^2 - b^2\right)^3 + \left(b^2 - c^2\right)^3 + \left(c^2 - a^2\right)^3$

15. Factorize : $(x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3$

16. Simplify: $\dfrac{\left(a^2 - b^2\right)^3 + \left(b^2 - c^2\right)^3 + \left(c^2 - a^2\right)^3}{(a - b)^3 + (b - c)^3 + (c - a)^3}$

17. Find the value of $x^3 - 8y^3 - 36xy - 216,$ when $x = 2y + 6.$

18. Factorize the following expression : $x^4 + x^2 + 1$

19. Factorize each of the following expressions:

$2p(a - b) + 3q(5a - 5b) + 4r(2a - 2b)$

20. Prove that :

$(a + b)^3 + (b + c)^3 + (c + a)^3 - 3(a + b)(b + c)(c + a) = 2(a^3 + b^3 + c^3$

21. Factorize the following expression: $4a^2 + 12ab + 9b^2 - 8a - 12b$

22. Factorisation by grouping the terms:

$$\left(x^2 + 3x\right)^2 - 5\left(x^2 + 3x\right) - y\left(x^2 + 3x\right) + 5y$$

23. Factorize each of the following expressions : $4a^2 - 9b^2 - 2a - 3b$

24. Factorize: (i) $8x^3 + 27y^3 + z^3 - 18xyz$, (ii) $a^3 - 8b^3 - 64c^3 - 24abc$

25. Factorize : $64a^3 + 125b^3 + 240a^2b + 300ab^2 \quad \dfrac{8}{27}x^3 + 1 + \dfrac{4}{3}x^2 + 2x$

$x^3 + 8y^3 + 6x^2y + 12xy^2 \qquad\qquad 8a^3 - 27b^3 - 36a^2b + 54ab^2$

$x^3 - 12x(x - 4) - 64$

26. Examples based on the middle term concepts :

$(i) 4\sqrt{3}x^2 + 5x - 2\sqrt{3} (ii) 5\sqrt{5}x^2 + 30x + 8\sqrt{5}$

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27. Factorize : $(x^2 - 4x)(x^2 - 4x - 1) - 20$

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28. Factorize : $p^3(q - r)^3 + q^3(r - p)^3 + r^3(p - q)^3$

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29. Factorize : $(x - y)^3 + (y - z)^3 + (z - x)^3$

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30. Factorize : $2\sqrt{2}x^3 + 3\sqrt{3}y^3 + \sqrt{5}(5 - 3\sqrt{6}xy)$

31. Prove that :

$$a^3 + b^3 + c^3 - 3abc = \frac{1}{2}(a + b + c)\left\{(a - b)^2 + (b - c)^2 + (c - a)^2\right\}$$

32. Factorize : $2\sqrt{2}a^3 + 8b^3 - 27c^3 + 18\sqrt{2}abc$

33. Resolve $a^3 - b^3 + 1 + 3ab$ into factors.

34. Factorise : $(a + b)^3 + (b + c)^3 + (c + a)^3 - 3(a + b)(b + c)(c + a)$

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35. Factorize each of the following expressions :

$x^2 + 2xy + y^2 - a^2 + 2ab - b^2$

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36. Factorize each of the following expressions : $3 - 12(a - b)^2$

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37. Factorize each of the following expressions : $x(x + z) - y(y + z)$

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38. Factorize each of the following expressions : $a^2 - b^2 - a - b$

39. Factorize each of the following expressions : $25x^2 - 10x + 1 - 36y^2$

40. Factorize each of the following expressions : $1 - 2ab - \left(a^2 + b^2\right)$

41. Factorize each of the following expressions:

$ab\left(a^2 + b^2 - c^2\right) + bc\left(a^2 + b^2 - c^2\right) - ca\left(a^2 + b^2 - c^2\right)$

42. Factorize each of the following expressions:

$$x\left(x^2 + y^2 - z^2\right) + y\left(-x^2 - y^2 + z^2\right) - z\left(x^2 + y^2 - z^2\right)$$

43. Factorize each of the following expressions by splitting the middle term: $2(x + y)^2 - 9(x + y) - 5$

44. Factorize each of the following expressions by splitting the middle term: $8(a + 1)^2 + 2(a + 1)(b + 2) - 15(b + 2)^2$

45. Factorize of the expression: $a^3 x + a^2(x - y) - a(y + z) - z$

46. Factorisation by grouping the terms:

$$\left(x^2 + 3x\right)^2 - 5\left(x^2 + 3x\right) - y\left(x^2 + 3x\right) + 5y$$

47. Factorize each of the following expressions:

$$\left(5x - \frac{1}{x}\right)^2 + 4\left(5x - \frac{1}{x}\right) + 4, \ x \neq 0$$

$$4(x + y)^2 - 28y(x + y) + 49y^2$$

$$(2a + 3b)^2 + 2\,(2a + 3b)(2a - 3b) + (2a - 3b)^2$$

48. Factorise: (i) $4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz$ (ii) $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz$

49. Factorize each of the following algebraic expressions : $x^8 - y^8$ (ii)

$$a^{12}x^4 - a^4x^{12}$$

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50. Factorize each of the following algebraic expressions : $x^8 - y^8$ (ii)

$$a^{12}x^4 - a^4x^{12}$$

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51. Factorize each of the following expressions: $4a^2 - 9b^2 - 2a - 3b$

$$x^2 + 2xy + y^2 - a^2 + 2ab - b^2$$

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52. Factorize each of the following expressions: $3 - 12(a - b)^2$ (ii)

$$x(x + z) - y(y + z)$$

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53. Factorize each of the following expressions : $x^4 + x^2 + 1$ (ii) $x^4 + 5x^2 + 9$

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54. Factorize each of the following rational expressions: $x^4 + 4$ (ii) $x^4 + 4x^2 + 3$

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55. Factorize the splitting the middle term: $x^2 + 3\sqrt{3}x + 6$

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56. Factorize the splitting the middle term: $x^2 + 3\sqrt{3}x - 30$

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57. Factorize : $(x^2 - 4x)(x^2 - 4x - 1) - 20$

58. Factorize each of the following expressions : (i) $4\sqrt{3}x^2 + 5x - 2\sqrt{3}$, (ii) $5\sqrt{5}x^2 + 30x + 8\sqrt{5}$,

59. Factorize of the expression: $5\sqrt{5}\,x^2 + 30x + 8\sqrt{5}$

60. Factorize of the expression: $7\sqrt{2}\,x^2 - 10x - 4\sqrt{2}$

61. Factorize each of the following expressions by splitting the middle term: $9(x - 2y)^2 - 4(x - 2y) - 13$

62. Factorize each of the following expressions by splitting the middle term: $2(x + y)^2 - 9(x + y) - 5$

63. Factorize each of the following expressions by splitting the middle term: $8(a + 1)^2 + 2(a + 1)(b + 2) - 15(b + 2)^2$

64. Give possible expressions for the length and breadth of the rectangle whose area is $25a^2 - 35a + 12$.

65. What are the possible expressions for the dimensions of a cuboid whose volume is $2ky^2 + 6ky - 20k.$

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66. Factorize: $x^3 + x - 3x^2 - 3$

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67. $a(a + b)^3 - 3a^2b(a + b)$

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68. Factorize: $x(x^3 - y^3) + 3xy(x - y)$

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69. Factorize: $x^3 - 2x^2y + 3xy^2 - 6y^3$

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70. Factorize: $6ab - b^2 + 12ac - 2bc$

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71. Factorize: $\left(x^2 + \dfrac{1}{x^2}\right) - 4\left(x + \dfrac{1}{x}\right) + 6$

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72. Factorize: $x(x - 2)(x - 4) + 4x - 8$

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73. Factorize: $(x + 2)\left(x^2 + 25\right) - 10x^2 - 20x$

74. Factorize: $2a^2 + 2\sqrt{6}ab + 3b^2$

75. Factorize: $(a - b + c)^2 + (b - c + a)^2 + 2(a - b + c)(b - c + a)$

76. Factorize: $a^2 + b^2 + 2(ab + bc + ca)$

77. Factorize: $4(x - y)^2 - 12(x - y)(x + y) + 9(x + y)^2$

78. Factorize: $a^2 - b^2 + 2bc - c^2$

79. Factorize: $a^2 + 2ab + b^2 - c^2$

80. Factorize: $a^2 + 4b^2 - 4ab - 4c^2$

81. Factorize: $xy^9 - yx^9$

82. Factorize: $x^4 + x^2y^2 + y^4$

83. Factorize: $x^2 - y^2 - 4xz + 4z^2$

84. Factorize: $x^2 + 6\sqrt{2}\,x + 10$

85. Factorize: $x^2 - 2\sqrt{2}\,x - 30$

86. Factorize: $x^2 - \sqrt{3}\,x - 6$

87. Factorize: $x^2 + 5\sqrt{5}\,x + 30$

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88. Factorize: $x^2 + 2\sqrt{3}\,x - 24$

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89. $2x^2 - \dfrac{5}{6}x + \dfrac{1}{12}$

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90. Factorize: $x^2 + \dfrac{12}{35}x + \dfrac{1}{35}$

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91. Factorize: $21x^2 - 2x + \dfrac{1}{21}$

92. Factorize: $5\sqrt{5}\,x^2 + 20x + 3\sqrt{5}$

93. Factorize: $2x^2 + 3\sqrt{5}\,x + 5$

94. solve $(2a - b)(18a - 9b - 4)$

95. $7(x - 2y)^2 - 25(x - 2y) + 12$

96. Factorize each of the following expressions by splitting the middle term: $2(x + y)^2 - 9(x + y) - 5$

97. Give possible expressions for the length and breadth of each of the following rectangles, in which their areas are given: Area: $25a^2 - 35a + 12$ Area: $35y^2 + 13y - 12$

98. What are the possible expressions for the dimensions of the cuboid whose volume is $3x^2 - 12x$.

99. Factorize : $a^3 + 27$

100. Factorize: $27a^3 + 125b^3$

101. Factorize: $(2a + 1)^3 + (a - 1)^3$

102. Factorize: $a^3 - 0.216$

103. Factorize: $p^6 - 512q^6$

104. Factorize: $(x + 1)^3 - (x - 1)^3$

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105. Factorize: $(x + 1)^3 + (x - 1)^3$

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106. Factorize: $8(x + y)^3 - 27(x - y)^3$

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107. Factorize: $a^6 - b^6$

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108. Factorize: $a^6 + b^6$

109. Factorize: $a^7 + ab^6$

110. Factorize each of the following expressions : $x^{12} - y^{12}$ (ii) $x^9 - y^9$

111. Factorize each of the following expressions : $x^{12} - y^{12}$ (ii) $x^9 - y^9$

112. Factorize: $x^3 + 3x^2 + 3x - 7$

113. Factorise: $x^3 - 3x^2 + 3x + 7$

114. Factorize: $x^6 - 7x^3 - 8$

115. Prove that : $\dfrac{0.87x0.87x0.87 + 0.13x0.13x0.13}{0.87x0.87 - 0.87x0.13 + 0.13x0.13} = 1$

116. Factorize: $p^3 + 27$

117. Factorize: $y^3 + 125$

118. Factorize: $1 - 27\,a^3$

119. Factorize: $8x^3y^3 + 27a^3$

120. Factorize: $64a^3 - b^3$

121. Factorize: $\dfrac{x^3}{216} - 8y^3$

122. Factorize: $10x^4y - 10xy^4$

123. Factorize: $54x^6y + 2x^3y^4$

124. Factorize: $32a^3 + 108b^3$

125. Factorize: $(a - 2b)^3 - 512b^3$

126. Factorize: $(a + b)^3 - 8(a - b)^3$

127. Factorize: $(x+2)^3 + (x-2)^3$

128. Factorise $8x^2y^3 - x^5$

129. Factorize: $1029 - 3x^3$

130. Factorize: $x^6 + y^6$

131. Factorize: $x^3y^3 + 1$

132. Factorize: $x^4y^4 - xy$

133. Factorize: $a^{12} + b^{12}$

134. Factorize: $x^3 + 6x^2 + 12x + 16$

135. Factorize: $a^3 + b^3 + a + b$

136. Factorize: $a^3 - \dfrac{1}{a^3} - 2a + \dfrac{2}{a}$

137. Factorize: $a^3 + 3a^2b + 3ab^2 + b^3 - 8$

138. Factorize: $8a^3 - b^3 - 4ax + 2bx$

139. Simplify: $\dfrac{173 \times 173 \times 173 + 127 \times 127 \times 127}{173 \times 173 - 173 \times 127 + 127 \times 127}$

140. Simplify:
$$\frac{155 \times 155 \times 155 - 55 \times 55 \times 55}{155 \times 155 + 155 \times 55 + 55 \times 55}$$

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141. Simplify:
$$\frac{1.2 \times 1.2 \times 1.2 - 0.2 \times 0.2 \times 0.2}{1.2 \times 1.2 + 1.2 \times 0.2 + 0.2 \times 0.2}$$

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142. Factorize: $8a^3 + b^3 + 12a^2b + 6ab^2$

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143. Factorize: $8a^3 - b^3 - 12a^2b + 6ab^2$

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144. Factorize: $27 - 125a^3 - 135a + 225a^2$

145. Factorize: $64a^3 - 27b^3 - 144a^2b + 108ab^2$

146. Factorize: $27\,p^3 - \dfrac{1}{216} - \dfrac{9}{2}p^2 + \dfrac{1}{4}p$

147. Factorize : $27a^3 + 125b^3$

148. Factorize: $\dfrac{64}{125}x^3 - 8 - \dfrac{96}{25}x^2 + \dfrac{48}{5}x$

149. Factorize: $a^3 + 3a^2b + 3ab^2 + b^3 - 8$

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150. Factorize: $64a^3 + 125b^3 + 240a^2b + 300ab^2$

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151. Factorize: $125x^3 - 27y^3 - 225x^2y + 135xy^2$

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152. Factorize: $\dfrac{8}{27}x^3 + 1 + \dfrac{4}{3}x^2 + 2x$

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153. Factorise $8x^3 + 27y^3 + 36x^2y + 54xy^2$.

154. Factorize: $a^3 - 3a^2b + 3ab^2 - b^3 + 8$

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155. Factorize: $x^3 + 8y^3 + 6x^2y + 12xy^2$

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156. Factorize: $8x^3 + y^3 + 12x^2y + 6xy^2$

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157. Factorize: $8a^3 + 27b^3 + 36a^2b + 54ab^2$

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158. Factorize: $8a^3 - 27b^3 - 36a^2b + 54ab^2$

159. Factorize: $x^3 - 12x(x - 4) - 64$

160. Factorize: $a^3x^3 - 3a^2bx^2 + 3ab^2x - b^3$

161. Factorize: $8x^3 + 27y^3 + z^3 - 18xyz$

162. Factorize: $a^3 - 8b^3 - 64c^3 - 24abc$

163. Factorise : $(a+b)^3 + (b+c)^3 + (c+a)^3 - 3(a+b)(b+c)(c+a)$

164. Resolve $a^3 - b^3 + 1 + 3ab$ into factors.

165. Factorize : $2\sqrt{2}a^3 + 8b^3 - 27c^3 + 18\sqrt{2}abc$

166. Prove that :

$$a^3 + b^3 + c^3 - 3abc = \frac{1}{2}(a+b+c)\{a-b)^2 + (b-c)^2 + (c-a)^2\}$$

167. Prove that :

$$(a+b)^3 + (b+c)^3 + (c+a)^3 - 3(a+b)(b+c)(c+a) = 2(a^3 + b^3 + c^3)$$

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168. Factorize : $2\sqrt{2}x^3 + 3\sqrt{3}y^3 + \sqrt{5}(5 - 3\sqrt{6}xy)$

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169. Find the product: $(a - b - c)(a^2 + b^2 + c^2 + ab + ac - bc)$

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170. Find the product:

$$(3x - 5y - 4)(9x^2 + 25y^2 + 15xy + 12x - 20y + 16)$$

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171. Factorize : $(x - y)^3 + (y - z)^3 + (z - x)^3$

172. Factorize : $p^3(q - r)^3 + q^3(r - p)^3 + r^3(p - q)^3$

173. Factorize : $\left(a^2 - b^2\right)^3 + \left(b^2 - c^2\right)^3 + \left(c^2 - a^2\right)^3$

174. Factorize : $(x - 2y)^3 + (2y - 3z)^3 + (3z - x)^3$

175. Simplify: $\dfrac{\left(a^2 - b^2\right)^3 + \left(b^2 - c^2\right)^3 + \left(c^2 - a^2\right)^3}{(a - b)^3 + (b - c)^3 + (c - a)^3}$

176. Find the value of

$(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c)$ when

$a + b + c = 3x$

177. Find the value of $x^3 - 8y^3 - 36xy - 216,$ when $x = 2y + 6.$

178. If $p = 2 - a,$ prove that $a^3 + 6ap + p^3 - 8 = 0$

179. Factorize: $a^3 + 8b^3 + 64c^3 - 24abc$

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180. Factorize: $x^3 - 8y^3 + 27z^3 + 18xyz$

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181. Factorize: $27x^3 - y^3 - z^3 - 9xyz$

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182. Factorize: $\dfrac{1}{27}x^3 - y^3 + 125z^3 + 5xyz$

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183. Factorize: $8x^3 + 27y^3 - 216z^3 + 108xyz$

184. Factorize: $125 + 8x^3 - 27y^3 + 90xy$

185. Factorize: $(3x - 2y)^3 + (2y - 4z)^3 + (4z - 3x)^3$

186. Factorize: $(2x - 3y)^3 + (4z - 2x)^3 + (3y - 4z)^3$

187.   Factorize:

$$\left(\frac{x}{2} + y + \frac{z}{3}\right)^3 + \left(\frac{x}{3} - \frac{2y}{3} + z\right)^3 + \left(-\frac{5x}{6} - \frac{y}{3} - \frac{4z}{3}\right)^3$$

188. Factorize: $(a - 3b)^3 + (3b - c)^3 + (c - a)^3$

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189. Factorize: $2\sqrt{2}a^3 + 3\sqrt{3}b^3 + c^3 - 3\sqrt{6}abc$

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190. Factorize: $3\sqrt{3}a^3 - b^3 - 5\sqrt{5}c^3 - 3\sqrt{15}abc$

$\left(\sqrt{3}a\right)^3 + \left(-b\right)^3 + \left(-\sqrt{5}c\right)^3 - 3\sqrt{3}a(-b)\left(-\sqrt{5}c\right)$

$\left(\sqrt{3}a - b - \sqrt{5}c\right)\left(\sqrt{3}a\right)^2 + \left(-b\right)^2 + \left(-\sqrt{5}c\right)^2 - \sqrt{3}a \times (-b) - (-b)$

$\left(\sqrt{3}a^2 - b - \sqrt{5}c\right)\left(3a^2 + b^2 + 5c^2 + \sqrt{3}ab - \sqrt{5}bc + \sqrt{15}ca\right)$

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191. Factorize: $8x^3 - 125y^3 + 180xy + 216$

192. Factorize: $2\sqrt{2}a^3 + 16\sqrt{2}b^3 + c^3 - 12abc$

193. Find the value of $x^3 + y^3 - 12xy + 64, \;\; when \; x + y = -4$

194. Multiply: $x^2 + y^2 + z^2 - xy + xz + yz$ by $x + y - z$

195. Multiply: $x^2 + 4y^2 + z^2 + 2xy + xz - 2yz$ by $x - 2y - z$

196. Multiply: $x^2 + 4y^2 + 2xy - 3x + 6y + 9$ by $x - 2y + 3$

$\left(x^2 + 4y^2 + 2xy - 3x + 6y + 9\right)(x - 2y + 3)$

$(x - 2y + 3)\left(x^2 + (-2y^2) + (3)^2 - x(-2y) - (-2y)3 - 3x\right)$

Now   as   per   the   formula,

$a^3 + b^3 + c^3 - 3abc = a^2 + b^2 + c^2 - ab - bc - ca$

$x^3 + (-2y)^3 + 3^3 - 3(x)(-2y)(3)$

$x^3 - 8y^3 + 27 + 18xy$

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197. Multiply: $9x^2 + 25y^2 + 15xy - 12x + 20y + 16$ by $3x - 5y + 4$

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198. Factorize: $x^4 + x^2 + 25 = 0$.

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199. Factorize: $x^2 - 1 - 2a - a^2$

200. If $a + b + c = 0,$ then write the value of $a^3 + b^3 + c^3$

201. If $a^2 + b^2 + c^2 = 20$ and $a + b + c = 0,$ find $ab + bc + ca$

202. If $a + b + c = 9$ and $ab + bc + ca = 40,$ find $a^2 + b^2 + c^2.$

203. If $a^2 + b^2 + c^2 = 250$ and $ab + bc + ca = 3,$ find $a + b + c$

204. Write the value of $25^3 - 75^3 + 50^3$, If $a + b + c = 0$

205. Write the value of $48^3 - 30^3 - 18^3$

206. Write the value of $\left(\frac{1}{2}\right)^3 + \left(\frac{1}{3}\right)^3 - \left(\frac{5}{6}\right)^3$

207. Write the value of $30^3 + 20^3 - 50^3$

208. The factors of $a^2 - 1 - 2x - x^2$ are (a)$(a - x + 1)(a - x - 1)$ (b) $(a + x - 1)(a - x + 1)$ (c)$(a + x + 1)(a - x - 1)$ (d) none of these

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209. The factors of $x^4 + x^2 + 25$ are (a)$(x^2 + 3x + 5)(x^2 - 3x + 5)$ (b) $(x^2 + 3x + 5)(x^2 + 3x - 5)$ (c)$(x^2 + x + 5)(x^2 - x + 5)$ (d) none of these

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210. The factors of $x^2 + 4y^2 + 4y - 4xy - 2x - 8$ are (a) $(x - 2y - 4)(x - 2y + 2)$ (b) $(x - y + 2)(x - 4y - 4)$ (c) $(x + 2y - 4)(x + 2y + 2)$ (d) none of these

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211. The factors of $x^3 - x^2y - xy^2 + y^3$ are (a)$(x + y)(x^2 - xy + y^2)$ (b) $(x + y)(x^2 + xy + y^2)$ (c)$(x + y)^2(x - y)$ (d) $(x - y)^2(x + y)$

212. The factors of $x^3 - 1 + y^3 + 3xy$ are (a) $(x - 1 + y)(x^2 + 1 + y^2 + x + y - xy)$ (b) $(x + y + 1)(x^2 + y^2 + 1 - xy - x - y)$ (c) $(x - 1 + y)(x^2 - 1 - y^2 + x + y + xy)$ (d)$3(x + y - 1)(x^2 + y^2 - 1)$

213. The factors of $8a^3 + b^3 - 6ab + 1$ are (a) $(2a + b - 1)(4a^2 + b^2 + 1 - 3ab - 2a)$ (b) $(2a - b + 1)(4a^2 + b^2 - 4ab + 1 - 2a + b)$ (c) $(2a + b + 1)(4a^2 + b^2 + 1 - 2ab - b - 2a)$ (d) $(2a - 1 + b)(4a^2 + 1 - 4a - b - 2ab)$

214. $(x+y)^3 - (x-y)^3$ can be factorized as (a) $2y(3x^2+y^2)$ (b) $2x(3x^2+y^2)$ (c) $2y(3y^2+x^2)$ (d) $2x(x^2+3y^2)$

215. The factors of $x^3 - 7x + 6$ are

A. $x(x-6)(x-1)$

B. $(x^2-6)(x-1)$

C. $(x+1)(x+2)(x-3)$

D. $(x-1)(x+3)(x-2)$

Answer: D

216. The expression $(a - b)^3 + (b - c)^3 + (c - a)^3$ can be factorized as (a) $(a - b)(b - c)(c - a)$ (b) $3(a - b)(b - c)(c - a)$ (c) $-3(a - b)(b - c)(c - a)$ (d) $(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

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217. The expression $x^4 + 4$ can be factorized as (a) $(x^2 + 2x + 2)(x^2 - 2x + 2)$ (b) $(x^2 + 2x + 2)(x^2 + 2x - 2)$ (c) $(x^2 - 2x - 2)(x^2 - 2x + 2)$ (d) $(x^2 + 2)(x^2 - 2)$

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218. If $3x = a + b + c$, then the value of $(x - a)^3 + (x - b)^3 + (x - c)^3 - 3(x - a)(x - b)(x - c)$ is (a) $a + b + c$ (b) $(a - b)(b - c)(c - a)$ (c) 0 (d) None of these

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219. If $(x + y)^3 - (x - y)^3 - 6y (x^2 - y^2) = ky^3$, then $k =$ (a)1 (b) 2 (c) 4 (d) 8

220. If $x^3 - 3x^2 + 3x + 7 = (x + 1)(ax^2 + bx + c)$, then $a + b + c =$ (a)4 (b) 12 (c) -10 (d) 3

221. The value of $\dfrac{(2.3)^3 - 0.027}{(2.3)^2 + 0.69 + 0.09}$ is (a)2 (b) 3 (c) 2.327 (d) 2.273

222. The value of $\dfrac{(0.013)^3 + (0.007)^3}{(0.013)^2 - 0.013 \times 0.007 + (0.007)^2}$ is (a)0.006 (b) 0.02 (c) 0.0091 (d) 0.00185