MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

ALGEBRAIC IDENTITIES

Others

1. If $x^4 + \frac{1}{x^4} = 47,$ find the value of $x^3 + \frac{1}{x^3}$

Watch Video Solution

2. If $x^4 + \frac{1}{x^4} = 194,$ find $x^3 + \frac{1}{x^3}, x^2 + \frac{1}{x^2}$ and $x + \frac{1}{x}$

Watch Video Solution

3. If $x - \frac{1}{x} = 7$, find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

4. Simplify: $\frac{(a^2 - b^2)^3 + (b^2 - c^2)^3 + (c^2 - a^2)^3}{(a - b)^3 + (b - c)^3 + (c - a)^3}$

Watch Video Solution

5. Find the value of $4x^2 + y^2 + 25z^2 + 4xy - 10yz - 20zx$ when $x = 4, y = 3$ and $z = 2$.

Watch Video Solution

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

Watch Video Solution

7. If $a+b+c=6$ and $ab+bc+ca=11$, find the value of $a^3+b^3+c^3-3abc$

Watch Video Solution

8. Find the following products:

(i) $(x+y+2z)\left(x^2+y^2+4z^2-xy-2yz-2xz\right)$

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

Watch Video Solution

9. If $x-\frac{1}{x}=-1,$ find the value of $x^2+\frac{1}{x^2}$

Watch Video Solution

10. If $a^2 + b^2 + c^2 - ab - bc - ca = 0,$ then find the relation between a,b and c

A. $a = b = -c$

B. $a = b = c$

C. $a = -b = c$

D. $-a = b = c$

Answer: B

Watch Video Solution

11. If $9x^2 + 25y^2 = 181$ and $xy = -6,$ find the value of $3x + 5y$

Watch Video Solution

12. if a-b=6 , ab=20 . find $a^3 - b^3$

Watch Video Solution

13. Write the following in expanded form: (i)$(9x+2y+z)^2$ (ii) $(3x+2y-z)^2$ (iii)$(x-2y-3z)^2$ (iv) $(-x+2y+z)^2$

Watch Video Solution

14. Prove that $a^2+b^2+c^2-ab-bc-ca$ is always non-negative for all values of $a, b\ and\ c.$

Watch Video Solution

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

Watch Video Solution

16. Simplify :

(i)$(a+b+c)^2$

(ii) $(a+b+c)^2-(a-b-c)^2$

Watch Video Solution

17. If $x^2+\frac{1}{x^2}=98,$ find the value of $x^3+\frac{1}{x^3}$

Watch Video Solution

18. Simplify the following:

$7x^3+8y^3-(4x+3y)\left(16x^2-12xy+9y^2\right)$

Watch Video Solution

19. If $a-b=6$ and $ab=20,$ find the value of a^3-b^3

Watch Video Solution

20. If $a+b=10$ and $ab=21,$ find the value of a^3+b^3

Watch Video Solution

21. If $4x^2+y^2=40$ and $xy=6,$ find the value of $2x+y.$

Watch Video Solution

22. If $a+b=7$ and $ab=12,$ find the value of $\left(a^2-ab+b^2\right)$

Watch Video Solution

23. If $x^2+\frac{1}{x^2}=83.$ find the value of $x^3-\frac{1}{x^3}$

Watch Video Solution

24. If $x + y + z = 1, xy + yz + zx = -1$ and $xyz = -1,$ find the value of $x^3 + y^3 + z^3$.

Watch Video Solution

25. Find the following products:

(i) $(0.9x + 0.7y)(0.81x^2 - 0.63xy + 0.49y^2)$

(ii) $\left(\frac{2x}{5} - \frac{3y}{7}\right)\left(\frac{9y^2}{49} + \frac{4x^2}{25} + \frac{6xy}{35}\right)$

Watch Video Solution

26. If $a + b + c = 15$ and $a^2 + b^2 + c^2 = 83,$ find the value of $a^3 + b^3 + c^3 - 3abc$

Watch Video Solution

27. Without actually calculating the cubes. Find the value of each of the following:

(i) $(-12)^3 + 7^3 + 5^3$

(ii) $(28)^3 + (-15)^3 + (-13)^3$

Watch Video Solution

28. If $a + b + c = 9$ and $a^2 + b^2 + c^2 = 35$, find the value of $a^3 + b^3 + c^3 - 3abc$

Watch Video Solution

29. If $x - \frac{1}{x} = 3 + 2\sqrt{2}$, find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

30. If $x + y = 12$ and $xy = 32,$ find the value of $x^2 + y^2$.

Watch Video Solution

31. If $3x + 2y = 12$ and $xy = 6,$ find the value of $9x^2 + 4y^2$

Watch Video Solution

32. If $x + \frac{1}{x} = 6$, find

(i)$x^2 + \frac{1}{x^2}$

(ii) $x^4 + \frac{1}{x^4}$

Watch Video Solution

33. If $x^2 + \frac{1}{x^2} = 27$, find the values of each of the following:

(i)$x + \frac{1}{x}$

(ii) $x - \frac{1}{x}$

Watch Video Solution

34. Find the products:

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

(ii)$(x - 1)(x + 1)\left(x^2 + 1\right)\left(x^4 + 1\right)$

Watch Video Solution

35. Without actually calculating the cube: $(-12)^3 + 7^3 + 5^3$

Watch Video Solution

36. Expand each of the following:

(i)$(3x + 4y)^2$

(ii) $(3x - 4y)^2$

Watch Video Solution

37. If $x - \frac{1}{x} = 3,$ find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

38. If $2x + 3y = 13$ and $xy = 6,$ find the value of $8x^3 + 27y^3$

Watch Video Solution

39. If $a + b = 10$ and $a^2 + b^2 = 58$, find the value of $a^3 + b^3$

Watch Video Solution

40. If $x + \frac{1}{x} = 7,$ find the value of $x^3 + \frac{1}{x^3}$

Watch Video Solution

41. Simplify each of the following expressions: (i) $(x+y+z)^2+\left(x+\frac{y}{2}+\frac{z}{3}\right)^2-\left(\frac{x}{2}+\frac{y}{3}+\frac{z}{4}\right)^2$

Watch Video Solution

42. Simplify : $(4x+2y)^3+(4x-2y)^3$

Watch Video Solution

43. If $x+y=12$ and $xy=27,$ find the value of x^3+y^3

Watch Video Solution

44. Prove that: $2a^2+2b^2+2c^2-2ab-2bc-2ca=\left[(a-b)^2+(b-c)^2+(c-a)^2\right]$

Watch Video Solution

Watch Video Solution

45. Expand each of the following (i) $(3x+4y)^2$ (ii) $(3x-4y)^2$

Watch Video Solution

46. Expand each of the following

(i) $\left(\sqrt{2}x-3y\right)^2$

(ii) $\left(2x-\frac{1}{3x}\right)^2$

Watch Video Solution

47. Expand each of the following

(i) $\left(\frac{x}{2}-\frac{y}{3}\right)^2$

(ii) $(x+5)(x-3)$

Watch Video Solution

48. Find the products:

(i)$(2x+3y)\ (2x-3y)$

(ii) $(x-1)(x+1)\left(x^2+1\right)\left(x^4+1\right)$

Watch Video Solution

49. Find the products:

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

Watch Video Solution

50. Find the products:

(i) $(2x+y)(2x-y)\left(4x^2+y^2\right)$

(ii) $\left(x-\frac{y}{5}-1\right)\left(x+\frac{y}{5}+1\right)$

Watch Video Solution

51. Evaluate each of the following by using identities: (i)103×97 (ii) 103×103 (iii) $(97)^2$

Watch Video Solution

52. Evaluate each of the following by using identities:

(i)$(0.99)^2$

(ii) $185 \times 185 - 115 \times 115$

Watch Video Solution

53. Evaluate each of the following by using identities: (i) $0.54 \times 0.54 - 0.46 \times 0.46$ (ii) 103×107

Watch Video Solution

54. Evaluate each of the following by using identities: (i)95×96 (ii) 104×96 (iii) 105×106

Watch Video Solution

55. If $x + \frac{1}{x} = 6,$ find : $x^2 + 1/x^2$

Watch Video Solution

56. If $x + \frac{1}{x} = 6,$ find : $x^4 + \frac{1}{x^4}$

Watch Video Solution

57. If $x^2 + \frac{1}{x^2} = 27,$ find the value of each of the following: $x + \frac{1}{x}$

Watch Video Solution

58. If $x^2 + \frac{1}{x^2} = 27,$ find the value of each of the following: $x - \frac{1}{x}$

Watch Video Solution

59. If $x + y = 12$ and $xy = 32$, find the value of $x^2 + y^2$

Watch Video Solution

60. If $3x + 2y = 12$ and $xy = 6$, find the value of $9x^2 + 4y^2$

Watch Video Solution

61. If $4x^2 + y^2 = 40$ and $xy = 6$, find the value of $2x + y$

Watch Video Solution

62. Prove that:

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

Watch Video Solution

63. If : $a^2 + b^2 + c^2 - ab - bc - ca = 0$, prove that $a = b = c$

Watch Video Solution

64. Evaluate each of the following using identities:

(i) $\left(2x - \frac{1}{x}\right)^2$

(ii) $(2x + y)(2x - y)$

Watch Video Solution

65. Evaluate each of the following using identities:

(i) $\left(a^2b - b^2a\right)^2$

(ii) $(a - 0.1)(a + 0.1)$

Watch Video Solution

66. Evaluate each of the following using identities:

$\left(1.5x^2 - 0.3y^2\right)\ \left(1.5x^2 + 0.3y^2\right)$

Watch Video Solution

67. Evaluate each of the following using identities: (i) $(399)^2$ (ii) $(0.98)^2$

Watch Video Solution

68. Evaluate each of the following using identities: (i)991×1009 (ii) 117×83

Watch Video Solution

69. Simplify each of the following: $175 \times 175 + 2 \times 175 \times 25 + 25 \times 25$

Watch Video Solution

70. Simplify each of the following: $322 \times 322 - 2 \times 322 \times 22 + 22 \times 22$

Watch Video Solution

71. Simplify each of the following:

$0.76 \times 0.76 + 2 \times 0.76 \times 0.24 + 0.24 \times 0.24$

Watch Video Solution

72. Simplify each of the following: $\frac{7.83 \times 7.83 - 1.17 \times 1.17}{6.66}$

Watch Video Solution

73. If $x + \frac{1}{x} = 11$, find the value of $x^2 + \frac{1}{x^2}$

Watch Video Solution

74. If $x - \frac{1}{x} = -1$, find the value of $x^2 + \frac{1}{x^2}$

Watch Video Solution

75. If $x + \frac{1}{x} = \sqrt{5}$, find the values of $x^2 + \frac{1}{x^2}$ and $x^4 + \frac{1}{x^4}$

Watch Video Solution

76. If $x^2 + \frac{1}{x^2} = 66,$ find the value of $x - \frac{1}{x}$

Watch Video Solution

77. If $x^2 + \frac{1}{x^2} = 79,$ find the value of $x + \frac{1}{x}$

Watch Video Solution

78. If $9x^2 + 25y^2 = 181 \ and \ xy = -6,$ find the value of $3x + 5y$

Watch Video Solution

79. If $2x + 3y = 8$ and $xy = 2$, find the value of $4x^2 + 9y^2$

Watch Video Solution

80. If $3x - 7y = 10$ and $xy = -1$, find the value of $9x^2 + 49y^2$

Watch Video Solution

81. Simplify each of the products: $\left(\frac{1}{2}a - 3b\right)\left(3b + \frac{1}{2}a\right)\left(\frac{1}{4}a^2 + 9b^2\right)$

Watch Video Solution

82. Simplify each of the products: $\left(m + \frac{n}{7}\right)^3 \left(m - \frac{n}{7}\right)$

Watch Video Solution

83. Simplify each of the products: $\left(\frac{x}{2}-\frac{2}{5}\right)\left(\frac{2}{5}-\frac{x}{2}\right)-x^2+2x$

Watch Video Solution

84. Simplify each of the products: $\left(x^2+x-2\right)\left(x^2-x+2\right)$

Watch Video Solution

85. Simplify each of the products: $\left(x^3-3x^2-x\right)\left(x^2-3x+1\right)$

Watch Video Solution

86. Simplify each of the products: $\left(2x^4-4x^2+1\right)\left(2x^4-4x^2-1\right)$

Watch Video Solution

87. Prove that $a^2 + b^2 + c^2 - ab - bc - ca$ is always non-negative for all values of $a,\ b\ and\ c$

Watch Video Solution

88. Write the following in expanded form: $(9x + 2y + z)^2$ (ii) $(3x + 2y - z)^2$ $(x - 2y - 3z)^2$ (iv) $(-x + 2y + z)^2$ $\left(\frac{1}{4}a - \frac{1}{2}b + 1\right)^2$ (iv) $(-2x + 5y - 3z)^2$

Watch Video Solution

89. Write the following in expanded form:

(i)$(9x + 2y + z)^2$

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

Watch Video Solution

90. Write the following in expanded form:

(i) $\left(\frac{1}{4}a - \frac{1}{2}b + 1\right)^2$

(ii) $(-2x + 5y - 3z)^2$

Watch Video Solution

91. Simplify: $(a + b + c)^2 + (a - b - c)^2$

Watch Video Solution

92. Simplify: $(a + b + c)^2 - (a - b - c)^2$

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

96. Write the following in the expanded form:

(i)$(a+2b+c)^2$

(ii) $(2a-3b-c)^2$

Watch Video Solution

97. Write the following in the expanded form: $(-3x+y+z)^2$ (ii) $(m+2n-5p)^2$

Watch Video Solution

98. Write the following in the expanded form:

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

(ii) $\left(a^2+b^2+c^2\right)^2$

Watch Video Solution

99. Write the following in the expanded form:

(i)$(ab+bc+ca)^2$

(ii) $\left(\frac{x}{y}+\frac{y}{z}+\frac{z}{x}\right)^2$

Watch Video Solution

100. Write the following in the expanded form: $(x+2y+4z)^2$

Watch Video Solution

101. Write the following in the expanded form:

(i)$(2x - y + z)^2$

Watch Video Solution

102. Simplify: $(a + b + c)^2 + (a - b + c)^2$

Watch Video Solution

103. Simplify: $(a + b + c)^2 - (a - b + c)^2$

Watch Video Solution

104. Simplify: $(a + b + c)^2 + (a - b + c)^2 + (a + b - c)^2$

Watch Video Solution

105. Simplify: $(2x+p-c)^2 - (2x-p+c)^2$

Watch Video Solution

106. Simplify: $(x^2+y^2-z^2)^2 - (x^2-y^2+z^2)^2$

Watch Video Solution

107. If $a+b+c=0$ and $a^2+b^2+c^2=16$, find the value of $ab+bc+ca$

Watch Video Solution

108. If $a^2+b^2+c^2=16$ and $ab+bc+ca=10$, find the value of $a+b+c$

Watch Video Solution

109. If $a+b+c=9$ and $ab+bc+ca=23$, find the value of $a^2+b^2+c^2$

Watch Video Solution

110. Find the value of $4x^2+y^2+25z^2+4xy-10yz-20zx$ when $x=4,\ y=3$ and $z=2$

Watch Video Solution

111. Simplify : $(x+y+z)^2+\left(x+\frac{y}{2}+\frac{z}{3}\right)^2-\left(\frac{x}{2}+\frac{y}{3}+\frac{z}{4}\right)^2$

Watch Video Solution

112. Simplify: $(x+y-2z)^2-x^2-y^2-3z^2+4xy$

Watch Video Solution

113. Simplify: $\left(x^2 - x + 1\right)^2 - \left(x^2 + x + 1\right)^2$

Watch Video Solution

114. Prove that: $(a + b)^3 = a^3 + b^3 + 3ab(a + b)$

Watch Video Solution

115. Prove that: $(a - b)^3 = a^3 - b^3 - 3ab(a - b)$

Watch Video Solution

116. Write each of the expanded form: $(2x + 3y)^3$

Watch Video Solution

117. Write each of the expanded form: $(3x - 2y)^3$

Watch Video Solution

118. Write each of the expanded form: $\left(\frac{1}{3x} - \frac{2}{5y}\right)^3$

Watch Video Solution

119. Simplify : $(4x + 2y)^3 + (4x - 2y)^3$

Watch Video Solution

120. Simplify each : $(4x + 2y)^3 - (4x - 2y)^3$

Watch Video Solution

121. If $x + y = 12$ and $xy = 27,$ find the value of $x^3 + y^3$

Watch Video Solution

122. If $x - y = 4$ and $xy = 21,$ find the value of $x^3 - y^3.$

Watch Video Solution

123. If $x + \frac{1}{x} = 7$, find the value of $x^3 + \frac{1}{x^3}$

Watch Video Solution

124. If $x - \frac{1}{x} = 3,$ find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

125. If $2x + 3y = 13$ and $xy = 6$, find the value of $8x^3 + 27y^3$

Watch Video Solution

126. If $a + b = 10$ and $a^2 + b^2 = 58,$ find the value of $a^3 + b^3$

Watch Video Solution

127. If $x^2 + \frac{1}{x^2} = 7$, find the value of $x^3 + \frac{1}{x^3}$

Watch Video Solution

128. If $x^2 + \frac{1}{x^2} = 83$. Find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

129. Evaluate: $(1002)^3$

Watch Video Solution

130. Evaluate: $(999)^3$

Watch Video Solution

131. If $x^4 + \frac{1}{x^4} = 47,$ find the value of $x^3 + 1/x^3$

Watch Video Solution

132. Evaluate: $23^3 - 17^3$

Watch Video Solution

133. Evaluate: $29^3 - 11^3$

Watch Video Solution

134. Find the cube of each of the following binomial expressions:

(i) $\frac{1}{x} + \frac{y}{3}$

(ii) $\frac{3}{x} - \frac{2}{x^2}$

Watch Video Solution

135. Find the cube of each of the following binomial expressions:

(i)$2x + \frac{3}{x}$

(ii) $4 - \frac{1}{3x}$

Watch Video Solution

136. Simplify: $(x+3)^3 + (x-3)^3$

Watch Video Solution

137. Simplify: $\left(\frac{x}{2}+\frac{y}{3}\right)^3 - \left(\frac{x}{2}-\frac{y}{3}\right)^3$

Watch Video Solution

138. Simplify: $\left(x+\frac{2}{x}\right)^3 + \left(x-\frac{2}{x}\right)^3$

Watch Video Solution

139. Simplify: $(2x-5y)^3 - (2x+5y)^3$

Watch Video Solution

140. If $a+b=10$ and $ab=21,$ find the value of a^3+b^3

Watch Video Solution

141. If $a-b=4$ and $ab=21,$ find the value of a^3-b^3

Watch Video Solution

142. If $x+\frac{1}{x}=5$ find the value of $x^3+\frac{1}{x^3}$

Watch Video Solution

143. If $x-\frac{1}{x}=7$ find the value of $x^3-\frac{1}{x^3}$

Watch Video Solution

144. If $x - \frac{1}{x} = 5$, find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

145. If $x^2 + \frac{1}{x^2} = 51,$ find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

146. If $x^2 + \frac{1}{x^2} = 98,$ find the value of $x^3 + \frac{1}{x^3}$

Watch Video Solution

147. If $2x + 3y = 13$ and $xy = 6$, find the value of $8x^3 + 27\,y^3$

Watch Video Solution

148. If $3x - 2y = 11$ and $xy = 12$, find the value of $27\,x^3 - 8y^3$

Watch Video Solution

149. If $x^4 + \frac{1}{x^4} = 119,$ find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

150. Evaluate each of the following: (i) $(103)^3$ (ii) $(98)^3$ (iii) $(9.\ 9)^3$

Watch Video Solution

151. Evaluate each of the following: $(10.\ 4)^3$ (ii) $(598)^3$ (iii) $(99)^3$

Watch Video Solution

152. Evaluate each of the following: (i)$111^3 - 89^3$ (ii) $46^3 + 34^3$

Watch Video Solution

153. Evaluate each of the following: (i)$104^3 + 96^3$ (ii) $93^3 - 107^3$

Watch Video Solution

154. If $x + \frac{1}{x} = 3,$ calculate $x^2 + \frac{1}{x^2},$ $x^3 + \frac{1}{x^3}$ and $x^4 + \frac{1}{x^4}$

Watch Video Solution

155. If $x^4 + \frac{1}{x^4} = 194,$ find $x^3 + \frac{1}{x^3},$ $x^2 + \frac{1}{x^2}$ and $x + \frac{1}{x}$

Watch Video Solution

156. Find the value of $27x^3 + 8y^3$, if (i)$3x + 2y = 14$ and $xy = 8$ (ii) $3x + 2y = 20$ and $xy = \frac{14}{9}$

Watch Video Solution

157. Find the value of $64x^3 - 125z^3$, if $4x - 5z = 16$ and $xz = 12$

Watch Video Solution

158. If $x - \frac{1}{x} = 3 + 2\sqrt{2}$, find the value of $x^3 - \frac{1}{x^3}$

Watch Video Solution

159. Find the products: $(x + 3y)(x^2 - 3xy + 9y^2)$

Watch Video Solution

160. Find the products: $(7a - 5b)\left(49a^2 + 35ab + 25b^2\right)$

Watch Video Solution

161. Find the product: $(0.\ 9x + 0.\ 7y)\left(0.\ 81x^2 - 0.\ 63xy + 0.49y^2\right)$

Watch Video Solution

162. Find the following products: $(9x + 2y)(2x - 3y + 7)$

Watch Video Solution

163. Simplify : $7x^3 + 8y^3 - (4x + 3y)\left(16x^2 - 12xy + 9y^2\right)$

Watch Video Solution

164. Simplify: $(6m - n)(6m + n)$

Watch Video Solution

165. If $a + b = 7$ and $ab = 12,$ find the value of $\left(a^2 - ab + b^2\right)$

Watch Video Solution

166. If $a + b = 10$ and $ab = 21$, find the value of $a^3 + b^3$

Watch Video Solution

167. If $a - b = 4$ and $ab = 45$, find the value of $a^3 - b^3$

Watch Video Solution

168. Find the products: $(3x + 2y)(9x^2 - 6xy + 4y^2)$

Watch Video Solution

169. Find the products: $(4x - 5y)(16x^2 + 20xy + 25y^2)$

Watch Video Solution

170. Find the products: $(7p^4 + q)(49p^8 - 7p^4q + q^2)$

Watch Video Solution

171. Find the products: $\left(\frac{x}{2} + 2y\right)\left(\frac{x^2}{4} - xy + 4y^2\right)$

Watch Video Solution

172. Find the products: $\left(\frac{3}{x}-\frac{5}{y}\right)\left(\frac{9}{x^2}+\frac{25}{y^2}+\frac{15}{xy}\right)$

Watch Video Solution

173. Find the products: $\left(3+\frac{5}{x}\right)\left(9-\frac{15}{x}+\frac{25}{x^2}\right)$

Watch Video Solution

174. Find the products: $\left(\frac{2}{x}+3x\right)\left(\frac{4}{x^2}+9x^2-6\right)$

Watch Video Solution

175. Find the products: $\left(\frac{3}{x}-2x^2\right)\left(\frac{9}{x^2}+4x^4+6x\right)$

Watch Video Solution

176. Find the products: $(1-x)\left(1+x+x^2\right)$

Watch Video Solution

177. Find the products: $\left(\frac{3}{x}-2x^2\right)\left(\frac{9}{x^2}+4x^4+6x\right)$

Watch Video Solution

178. Find the products: $(1-x)\left(1+x+x^2\right)$

Watch Video Solution

179. Find the products: $(1+x)\left(1-x+x^2\right)$

Watch Video Solution

180. Find the products: $\left(x^2-1\right)\left(x^4+x^2+1\right)$

Watch Video Solution

181. Find the products: $(x^3+1)(x^6-x^3+1)$

Watch Video Solution

182. If $x=3\,and\,y=-1,$ find the values of each of the using identity: $(9y^2-4x^2)(81y^4+36x^2y^2+16x^4)$

Watch Video Solution

183. If $x=3\,and\,y=-1,$ find the values of each of the using identity: $\left(\frac{3}{x}-\frac{x}{3}\right)\left(\frac{x^2}{9}+\frac{9}{x^2}+1\right)$

Watch Video Solution

184. If $x = 3\, and\, y = -1,$ find the values of each of the using identity: $\left(\frac{x}{7} + \frac{y}{3}\right)\left(\frac{x^2}{49} + \frac{y^2}{9} - \frac{xy}{21}\right)$

Watch Video Solution

185. If $x = 3\, and\, y = -1,$ find the values of each of the using identity: $\left(\frac{x}{4} - \frac{y}{3}\right)\left(\frac{x^2}{16} + \frac{xy}{12} + \frac{y^2}{9}\right)$

Watch Video Solution

186. If $x = 3\, and\, y = -1,$ find the values of each of the using identity: $\left(\frac{5}{x} + 5x\right)\left(\frac{25}{x^2} - 25 + 25x^2\right)$

Watch Video Solution

187. If $a+b=10\ and\ ab=16$, find the value of $a^2-ab+b^2\ and\ a^2+ab+b^2$

Watch Video Solution

188. If $a+b=8\ and\ ab=6,$ find the value of a^3+b^3

Watch Video Solution

189. If $a-b=6\ and\ ab=20,$ find the value of a^3-b^3

Watch Video Solution

190. If $x=-2\,and\,y=1,$ by using an identity find the value: $\left(4y^2-9x^2\right)\left(16y^4+36x^2y^2+81x^4\right)$

Watch Video Solution

191. If $x = -2 \, and \, y = 1,$ by using an identity find the value: $\left(\frac{2}{x} - \frac{x}{2}\right)\left(\frac{4}{x^2} + \frac{x^2}{4} + 1\right)$

Watch Video Solution

192. If $y = 1,$ by using an identity find the value: $\left(5y + \frac{15}{y}\right)\left(25y^2 - 75 + \frac{225}{y^2}\right)$

Watch Video Solution

193. Find the product: $(x + y + 2z)(x^2 + y^2 + 4z^2 - xy - 2yz - 2zx)$

Watch Video Solution

194. Find the product:

$(2x - y + 3z)(4x^2 + y^2 + 9z^2 + 2xy + 3yz - 6xz)$

Watch Video Solution

195. If $a + b + c = 6 \, and \, ab + bc + ca = 11$, find the value of $a^3 + b^3 + c^3 - 3abc$

Watch Video Solution

196. Evaluate: $30^3 + 20^3 - 50^3$

Watch Video Solution

197. If $a + b + c = 15 \, and \, a^2 + b^2 + c^2 = 83,$ find the value of $a^3 + b^3 + c^3 - 3abc$

Watch Video Solution

198. Evaluate: $1.5^3 - 0.9^3 - 0.6^3$

Watch Video Solution

199. Without actually calculating the cube: $(-12)^3 + 7^3 + 5^3$

Watch Video Solution

200. Without actually calculating the cube: $(28)^3 + (-15)^3 + (-13)^3$

Watch Video Solution

201. If $x + y + z = 1,\ xy + yz + zx = -1\ and\ xyz = -1,$ find the value of $x^3 + y^3 + z^3$

Watch Video Solution

202. Simplify: $\frac{(a^2-b^2)^3+(b^2-c^2)^3+(c^2-a^2)^3}{(a-b)^3+(b-c)^3+(c-a)^3}$

Watch Video Solution

203. Find the product:

$(3x+2y+2z)\ (9x^2+4y^2+\ 4\,z^2-\ 6\,xy-4\,yz-6zx)$

Watch Video Solution

204. Find the product:

$(4x-3y+2z)\ (16x^2+9y^2+4z^2+12xy+6yz-8zx)$

Watch Video Solution

205. Find the product:

$(2a - 3b - 2c)(4a^2 + 9b^2 + 4c^2 + 6ab - 6bc + 4ca)$

Watch Video Solution

206. Find the product:

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

Watch Video Solution

207. If $x + y + z = 8$ and $xy + yz + zx = 20,$ find the value of $x^3 + y^3 + z^3 - 3xyz$

Watch Video Solution

208. If $a+b+c=9$ and $ab+bc+ca=26,$ find the value of $a^3+b^3+c^3-3abc$

Watch Video Solution

209. If $a+b+c=9$ and $a^2+b^2+c^2=35,$ find the value of $a^3+b^3+c^3-3abc$

Watch Video Solution

210. Evaluate: $25^3-75^3+50^3$

Watch Video Solution

211. Evaluate: $48^3-30^3-18^3$

Watch Video Solution

212. Evaluate: $\left(\frac{1}{2}\right)^3 + \left(\frac{1}{3}\right)^3 - \left(\frac{5}{6}\right)^3$

Watch Video Solution

213. Evaluate: $(0.2)^3 - (0.3)^3 + (0.1)^3$

Watch Video Solution

214. If $x + \frac{1}{x} = 3$, then find the value of $x^2 + \frac{1}{x^2}$

Watch Video Solution

215. If $x + \frac{1}{x} = 3$, then the value of $x^6 + \frac{1}{x^6}$ is.

Watch Video Solution

216. If $a + b = 7 \ and \ ab = 12,$ find the value of $a^2 + b^2$

Watch Video Solution

217. If $a - b = 5$ and $ab = 12,$ find the value of $a^2 + b^2$

Watch Video Solution

218. If $x - \frac{1}{x} = \frac{1}{2}$, then write the value of $4x^2 + \frac{4}{x^2}$

Watch Video Solution

219. If $a^2 + \frac{1}{a^2} = 102,$ find the value of $a - \frac{1}{a}$

Watch Video Solution

220. If $a+b+c=0$, then write the value of $\frac{a^2}{bc}+\frac{b^2}{ca}+\frac{c^2}{ab}$

Watch Video Solution

221. If $x+\frac{1}{x}=5,$ then $x^2+\frac{1}{x^2}=?$

(a)25

(b) 10

(c) 23

(d) 27

Watch Video Solution

222. If $x+\frac{1}{x}=2,$ then $x^3+\frac{1}{x^3}=?$ (a)64 (b) 14 (c) 8 (d) 2

Watch Video Solution

223. If $x + \frac{1}{x} = 4,$ then $x^4 + \frac{1}{x^4} = ?$

(a)196

(b) 194

(c) 192

(d) 190

Watch Video Solution

224. If $x + \frac{1}{x} = 3,$ then $x^6 + \frac{1}{x^6} = ?$

(a)927

(b) 414

(c) 364

(d) 322

Watch Video Solution

225. If $x^4 + \frac{1}{x^4} = 623,$ then $x + \frac{1}{x} = ?$

(a)27

(b) 25

(c) $3\sqrt{3}$

(d) $-3\sqrt{3}$

Watch Video Solution

226. If $x^2 + \frac{1}{x^2} = 102,$ then $x - \frac{1}{x} = ?$

(a)8

(b) 10

(c) 12

(d) 13

Watch Video Solution

227. If $x^3 + \frac{1}{x^3} = 110,$ then $x + \frac{1}{x} = ?$

(a) 5

(b) 10

(c) 15

(d) none of these

Watch Video Solution

228. If $x^3 - \frac{1}{x^3} = 14,$ then $x - \frac{1}{x} = ?$ (a)5 (b) 4 (d) 3 (d) 2

Watch Video Solution

229. If $x^4 + \frac{1}{x^4} = 194,$ find $x^3 + \frac{1}{x^3}, x^2 + \frac{1}{x^2}$ and $x + \frac{1}{x}$

Watch Video Solution

230. If $x - \frac{1}{x} = \frac{15}{4}$, then $x + \frac{1}{x} = ?$

(a)4

(b) $\frac{17}{4}$

(c) $\frac{13}{4}$

(d) $\frac{1}{4}$

Watch Video Solution

231. If $3x + \frac{2}{x} = 7$, then $\left(9x^2 - \frac{4}{x^2}\right) = ?$

(a)25

(b) 35

(c) 49

(d) 30

Watch Video Solution

232. If $a^2 + b^2 + c^2 - ab - bc - ca = 0,$ then

(a)$a + b = c$

(b) $b + c = a$

(c)$c + a = b$

(d) $a = b = c$

Watch Video Solution

233. If $a + b + c = 0$, then $\frac{a^2}{bc} + \frac{b^2}{ca} + \frac{c^2}{ab} = ?$

(a)0

(b) 1

(c) -1

(d) 3

Watch Video Solution

234. If $a^{\frac{1}{3}} + b^{\frac{1}{3}} + c^{\frac{1}{3}} = 0$, then+? (a)$a + b + c = 0$ (b) $(a + b + c)^3 = 27\,abc$ (c)$a + b + c = 3abc$ (d) $a^3 + b^3 + c^3 = 0$

Watch Video Solution

235. If $a + b + c = 9$ and $ab + bc + ca = 23$, then $a^2 + b^2 + c^2 = ?$

(a)35

(b) 58

(c) 127

(d) none of these

Watch Video Solution

236. If $a + b + c = 9$ and $ab + bc + ca = 23$, then $a^3 + b^3 + c^3 - 3abc = ?$ (a)108 (b) 207 (c) 669 (d) 729

Watch Video Solution

237. $(a-b)^3+(b-c)^3+(c-a)^3=?$

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

(b)$3(a-b)(b-c)(c-a)$

(c)$(a-b)(b-c)(c-a)$

(d)none of these

Watch Video Solution

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

Watch Video Solution

239. The product $(a+b)(a-b)\left(a^2-ab+b^2\right)\left(a^2+ab+b^2\right)$ is equal to:

(a)a^6+b^6

(b) a^6-b^6

(c) $a^3 - b^3$

(d) $a^3 + b^3$

Watch Video Solution

240. If $\frac{a}{b} + \frac{b}{a} = -1$, then $a^3 - b^3 = ?$

(a)1

(b) -1

(c) $\frac{1}{2}$

(d) 0

Watch Video Solution

241. The product $\left(x^2 - 1\right)\left(x^4 + x^2 + 1\right)$ is equal to:

(a)$x^8 - 1$

(b) $x^8 + 1$

(c) $x^6 - 1$

(d) $x^6 + 1$

Watch Video Solution

242. If $a - b = -8 \ and \ ab = -12,$ then $a^3 - b^3 = ?$

(a) -244

(b) -240

(c) -224

(d) -260

Watch Video Solution

243. If $Lt_{x \to a} \frac{x^9 - a^9}{x - a} = Lt_{x \to 5}(x + 4)$ then all possible values of a are

(i) 2, 3

(ii) -2, 2

(iii) -1, 1

(iv) -3, 3

Watch Video Solution

244. If $\frac{a}{b}+\frac{b}{a}=1,$ then $a^3+b^3=?$

(a)1

(b) -1

(c) $\frac{1}{2}$

(d) 0

Watch Video Solution

245. $75\times 75+2\times 75\times 25+25\times 25$ is equal to=?

(a)10000

(b) 6250

(c) 7500

(d) 3750

Watch Video Solution

246. $(x-y)(x+y)(x^2+y^2)(x^4+y^4)$ is equal to=

A. $x^{16} - y^{16}$

B. $x^8 - y^8$

C. $x^8 + y^8$

D. $x^{16} + y^{16}$

Answer: B

Watch Video Solution

247. If $49a^2 - b = \left(7a + \frac{1}{2}\right)\left(7a - \frac{1}{2}\right)$, then the value of b is =?

(a)0

(b) $\frac{1}{4}$

(c) $\frac{1}{\sqrt{2}}$

(d) $\frac{1}{2}$

Watch Video Solution