MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

FACTORIZATION OF POLYNOMIAL

Others

1. Show that $(x-2)$ is a factor of the polynomial $f(x)=2x^3-3x^2-17x+30$ and hence factorize $f(x)$.

Watch Video Solution

2. What must be added to $3x^3 + x^2 - 22x + 9$ so that the result is exactly divisible by $3x^2 + 7x - 6$?

Watch Video Solution

3. If $ax^3 + bx^2 + x - 6$ has $x + 2$ as a factor and leaves a remainder 4 when divided by $(x - 2)$, find the value of a and b.

Watch Video Solution

4. If both x-2 and x-1/2 are factors of px^2+5x+r , show that p=r

Watch Video Solution

5. Find the values of a and b so that the polynomial $x^3 + 10x^2 + ax + b$ is exactly divisible by x-1 as well as x-2.

Watch Video Solution

6. For what values of a is $2x^3 + ax^2 + 11x + a + 3$ exactly divisible by $(2x - 1)$?

Watch Video Solution

7. Determine the value of a for which the polynomial $2x^4 - ax^3 + 4x^2 + 2x + 1$ is divisible by $1 - 2x$.

Watch Video Solution

8. Find the value of a and b so that the polynomial $x^3 - ax^2 - 13x + b$ has $(x - 1)$ and $(x + 3)$ as factors.

Watch Video Solution

9. Without actual division prove that $2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly division by $x^2 - 3x + 2$.

Watch Video Solution

10. Find the value of a, if $x - 1$ is a factor of $x^3 - a^2x + x + 2$.

Watch Video Solution

11. If the polynomials $ax^3 + 3x^2 - 13$ and $2x^3 - 5x + a$, when divided by $(x - 2)$ leave the same remainder, find the value of a .

Watch Video Solution

12. Show that $(x - 1)$ is a factor of $x^{10} - 1$ and also of $x^{11} - 1$.

Watch Video Solution

13. Identify polynomials in the following: (i) $f(x) = 4x^3 - x^2 - 3x + 7$ (ii) $g(x) = 2x^3 - 3x^2 + \sqrt{x} - 1$ (iii) $p(x) = \frac{2}{3}x^2 - \frac{7}{4}x + 9$ (iv) $q(x) = 2x^2 - 3x + \frac{4}{x} + 2$ (v) $h(x) = x^4 - x^{\frac{2}{3}} + x - 1$ (vi) $f(x) = 2 + \frac{3}{x} + 4x$

Watch Video Solution

14. Show that $x = 1$ is a root of the polynomial $2x^3 - 3x^2 + 7x - 6$

Watch Video Solution

15. If $x = \frac{4}{3}$ is a root of the polynomial $f(x) = 6x^3 - 11x^2 + kx - 20$, find the value of k

Watch Video Solution

16. If $x = 2$ and $x = 0$ are roots of the polynomial $f(x) = 2x^3 - 5x^2 + ax + b$. Find the values of a and b.

Watch Video Solution

17. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer : (i) $3x^2 - 4x + 15$ (ii) $y^2 + 2\sqrt{3}$ (iii) $3\sqrt{x} + \sqrt{2}x$ (iv) $x - \frac{4}{x}$ (v) $x^{12} + y^3 + t^{50}$

Watch Video Solution

18. Write the degrees of each of the following polynomials: (i) $7x^3 + 4x^2 - 3x + 12$ (ii) $12 - x + 2x^3$ (iii) $5y - \sqrt{2}$ (iv) 7 (v) 0

Watch Video Solution

19. Classify the following polynomials as polynomials in one-variable, two variables etc. : (i) $x^2 - xy + 7y^2$ (ii) $x^2 - 2tx + 7t^2 - x + t$ (iii) $t^3 - 3t^2 + 4t - 5$ (iv) $xy + yz + zx$

Watch Video Solution

20. Using factor theorem, factorize the polynomial $x^3 - 6x^2 + 11x - 6$.

Watch Video Solution

21. Find the rational roots of the polynomial $2x^3 + 3x^2 - 11x - 6$

Watch Video Solution

22. If $x = 0$ and $x = -1$ are the roots of the polynomial $f(x) = 2x^3 - 3x^2 + ax + b$, find the value of a and b.

Watch Video Solution

23. If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is a polynomial such that when it is divided by $x - 1$ and $x + 1$, remainders are 5 and 19 respectively. Determine the remainder when $f(x)$ is divided by $x - 3$.

Watch Video Solution

24. Using factor theorem, factorize the polynomial $x^4 + 2x^3 - 13x^2 - 14x + 24$

Watch Video Solution

25. Factorize : $2x^4 + x^3 - 14x^2 - 19x - 6$

Watch Video Solution

26. Without actual division, prove that $2x^4 - 5x^3 + 2x^2 - x + 2$ is exactly divisible by $x^2 - 3x + 2$.

Watch Video Solution

27. Factorize $x^3 + 13x^2 + 32x + 20$, if it is given that $x + 2$ is its factor.

Watch Video Solution

28. If $x^2 - 1$ is a factor of $ax^4 + bx^3 + cx^2 + dx + e,$ show that $a + c + e = b + d$

Watch Video Solution

29. In each of the following two polynomials, find the value of $a,$ if $x + a$ is a factor. i) $x^3 + ax^2 - 2x + a + 4$ ii)$x^4 - a^2x^2 + 3x - a$

Watch Video Solution

30. What must be added to $x^4 + 2x^3 - 2x^2 + x - 1$ so that the result is exactly divisible by $x^2 + 2x - 3$.

Watch Video Solution

31. Without actual division, prove that $x^4 + 2x^3 - 2x^2 + 2x - 3$ is exactly divisible by $x^2 + 2x - 3$.

Watch Video Solution

32. If $x-2$ is a factor of each of the following two polynomials, find the values of a in each case. (i) x^3-2ax^2+ax-1 (ii) $x^5-3x^4-ax^3+3ax^2+2ax+4$

Watch Video Solution

33. If $f(x)=x^4-2x^3+3x^2-ax+b$ is a polynomial such that when it is divided by $x-1$ and $x+1$, remainders are 5 and 19 respectively. Determine the remainder when $f(x)$ is divided by $x-3$.

Watch Video Solution

Watch Video Solution

34. Using factor theorem, factorize the following polynomial : $x^3 + 2x^2 - x - 2$

Watch Video Solution

35. Use factor theorem to verify that $x + a$ is a factor of $x^n + a^n$ for any odd positive integer.

Watch Video Solution

36. If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is a polynomial such that when it is divided by $x - 1$ and $x + 1$, the remainders are respectively 5 and 19. Determine the remainder when $f(x)$ is divided by $(x - 2)$.

Watch Video Solution

37. Let R_1 and R_2 are the remainders when the polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by $x + 1$ and $x - 2$ respecti-vely. If $2R_1 + R_2 = 6$, find the value of a.

Watch Video Solution

38. The polynomials $ax^3 + 3x^2 - 13$ and $2x^3 - 5x + a$ are divided by $x + 2$, if the remainder in each case is the same, find the value of a.

Watch Video Solution

39. If the polynomials $ax^3 + 4x^2 + 3x - 4$ and $x^3 - 4x + a$ leave the same remainder when divided by $(x - 3)$, find the value of a.

Watch Video Solution

40. Find the remainder when $f(x) = x^3 - 6x^2 + 2x - 4$ is divided by $g(x) = 3x - 1$.

Watch Video Solution

41. Find the remainder when $p(x) = 4x^3 - 12x^2 + 14x - 3$ is divided by $g(x) = x - \frac{1}{2}$

Watch Video Solution

42. Find the remainder when $p(x) = x^3 - ax^2 + 6x - a$ is divided by $(x - a)$.

Watch Video Solution

43. Find the integral roots of the polynomial f(X) = $x^3 + 6x^2 + 11x + 6$

Watch Video Solution

44. What must be subtracted from $x^3 - 6x^2 - 15x + 80$ so that the result is exactly

divisible by $x^2 + x - 12$?

Watch Video Solution

45. If $x^3 + ax^2 - bx + 10$ is divisible by $x^2 - 3x + 2$, find the values of a and b.

Watch Video Solution

46. What must be subtracted from $4x^4 - 2x^3 - 6x^2 + x - 5$ so that the result is exactly divisible by $2x^2 + x - 1$

Watch Video Solution

47. The polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ when divided by $(x - 4)$ leave the remainders $R_1 and R_2$ respectively. Find the values of a in each of the following cases, if (i) $R_1 = R_2$ (ii) $R_1 + R_2 = 0$ (iii) $2R_1 - R_2 = 0$

Watch Video Solution

48. If the polynomials $2x^3 + ax^2 + 3x - 5$ and $x^3 + x^2 - 4x + a$ leave the same remainder when divided by $x - 2,$ find the value of a.

Watch Video Solution

Watch Video Solution

49. In each of the following two polynomials, find the value of a, if $x+a$ is a factor. (i) $x^3+ax^2-2x+a+4$ (ii) $x^4-a^2x^2+3x-a$

Watch Video Solution

50. Factorize $9z^3-27z^2-100z+300$, if it is given that $(3z+10)$ is a factor of it.

Watch Video Solution

51. Using factor theorem, factorize each of the following polynomials : $x^4 - 2x^3 - 7x^2 + 8x + 12$

Watch Video Solution

52. Using factor theorem, factorize each of the following polynomials : $2x^4 - 7x^3 - 13x^2 + 63x - 45$

Watch Video Solution

53. Using factor theorem, factorize each of the following polynomials : $3x^3 - x^2 - 3x + 1$

Watch Video Solution

54. Using factor theorem, factorize each of the following polynomials : $x^3 - 10x^2 - 53x - 42$

Watch Video Solution

55. Using factor theorem, factorize each of the following polynomials : $x^3 + 13x^2 + 32x + 20$

Watch Video Solution

56. Using factor theorem, factorize each of the following polynomials : $x^3 + 2x^2 - x - 2$

Watch Video Solution

57. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer : (i) $3x^2 - 4x + 15$ (ii) $y^2 + 2\sqrt{3}$ (iii)$3\sqrt{x} + \sqrt{2}x$ (iv) $x - \frac{4}{x}$ (v) $x^{12} + y^3 + t^{50}$

Watch Video Solution

58. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer : (i) $3x^2 - 4x + 15$ (ii) $y^2 + 2\sqrt{3}$ (iii)$3\sqrt{x} + \sqrt{2}x$ (iv) $x - \frac{4}{x}$ (v) $x^{12} + y^3 + t^{50}$

Watch Video Solution

59. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer : (i) $3x^2 - 4x + 15$

(ii) $y^2 + 2\sqrt{3}$ (iii) $3\sqrt{x} + \sqrt{2}x$ (iv) $x - \frac{4}{x}$ (v) $x^{12} + y^3 + t^{50}$

Watch Video Solution

60. Write the coefficient of x^2 in each of the following: (i) $17 - 2x + 7x^2$ (ii) $9 - 12x + x^3$

Watch Video Solution

61. Write the coefficient of x^2 in each of the following: (i) $\frac{\pi}{6}x^2 - 3x + 4$ (ii) $\sqrt{3}\,x - 7$

Watch Video Solution

62. Write the degrees of each of the following polynomials: (i)$7x^3 + 4x^2 - 3x + 12$ (ii) $12 - x + 2x^3$ (iii) $5y - \sqrt{2}$ (iv) 7 (v) 0

Watch Video Solution

63. Write the degrees of each of the following polynomials: $7x^3 + 4x^2 - 3x + 12$ (ii) $12 - x + 2x^3$ (iii) $5y - \sqrt{2}$ (iv) 7 (v) 0

Watch Video Solution

64. Classify the following polynomials as linear, quadratic, cubic and biquadratic polynomials: (i) $x + x^2 + 4$ (ii) $3x - 2$ (iii) $2x + x^2$

Watch Video Solution

65. Classify the following polynomials as linear, quadratic, cubic and biquadratic polynomials: (i) $3y$ (ii) $t^2 + 1$ (iii) $7t^4 + 4t^3 + 3t - 2$

Watch Video Solution

66. Classify the following polynomials as polynomials in one-variable, two variables etc.: (i) $x^2 - xy + 7y^2$ (ii) $x^2 - 2tx + 7t^2 - x + t$

Watch Video Solution

67. Classify the following polynomials as polynomials in one-variable, two variables etc.: (i) $t^3 - 3t^2 + 4t - 5$ (ii) $xy + zy + zx$

Watch Video Solution

68. Identify polynomials in the following: (i)

$f(x) = 4x^3 - x^2 - 3x + 7$ (ii)

$g(x) = 2x^3 - 3x^2 + \sqrt{x} - 1$ (iii)

$p(x) = \frac{2}{3}x^2 - \frac{7}{4}x + 9$ (iv)

$q(x) = 2x^2 - 3x + \frac{4}{x} + 2$ (v)

$h(x) = x^4 - x^{\frac{2}{3}} + x - 1$ (vi) $f(x) = 2 + \frac{3}{x} + 4x$

Watch Video Solution

69. Identify polynomials in the following: (i)

$f(x) = 4x^3 - x^2 - 3x + 7$ (ii)

$g(x) = 2x^3 - 3x^2 + \sqrt{x} - 1$ (iii)

$p(x) = \frac{2}{3}x^2 - \frac{7}{4}x + 9$ (iv)

$q(x) = 2x^2 - 3x + \frac{4}{x} + 2$ (v)

$h(x) = x^4 - x^{\frac{2}{3}} + x - 1$ (vi) $f(x) = 2 + \frac{3}{x} + 4x$

Watch Video Solution

70. Identify polynomials in the following: (i)

$f(x) = 4x^3 - x^2 - 3x + 7$ (ii)

$g(x) = 2x^3 - 3x^2 + \sqrt{x} - 1$ (iii)

$p(x) = \frac{2}{3}x^2 - \frac{7}{4}x + 9$ (iv)

$q(x) = 2x^2 - 3x + \frac{4}{x} + 2$ (v)

$h(x) = x^4 - x^{\frac{2}{3}} + x - 1$ (vi) $f(x) = 2 + \frac{3}{x} + 4x$

Watch Video Solution

71. Identify constant, linear, quadratic and cubic polynomials from the following polynomials: (i) $f(x) = 0$ (ii) $g(x) = 2x^3 - 7x + 4$

Watch Video Solution

72. Identify constant, linear, quadratic and cubic polynomials from the following polynomials: (i) $h(x) = -3x + \frac{1}{2}$ (ii) $p(x) = 2x^2 - x + 4$

Watch Video Solution

73. Identify constant, linear, quadratic and cubic polynomials from the following polynomials: $q(x) = 4x + 3$ (ii) $r(x) = 3x^3 + 4x^2 + 5x - 7$

Watch Video Solution

74. Give one example each of a binomial of degree 35 and of a monomial of degree 100.

Watch Video Solution

75. If $f(x) = 2x^3 - 13x^2 + 17x + 12,$ find (i) $f(2)$

(ii) $f(-3)$

Watch Video Solution

76. Show that $x = 1$ is a root of the polynomial

$2x^3 - 3x^2 + 7x - 6$

Watch Video Solution

77. If $x = \frac{4}{3}$ is a root of the polynomial $f(x) = 6x^3 - 11x^2 + kx - 20,$ find the value of k

Watch Video Solution

78. If $x = 2$ and $x = 0$ are roots of the polynomial $f(x) = 2x^3 - 5x^2 + ax + b$. Find the values of a and b.

Watch Video Solution

79. Find the integral roots of the polynomial $f(x) = x^3 - 6x^2 + 11x - 6$

Watch Video Solution

80. Find the rational roots of the polynomial $2x^3 + 3x^2 - 11x - 6$

Watch Video Solution

81. Find the zero (root) of the polynomial in each of the following cases: $f(x) = x - 5$ (ii) $g(x) = 2x + 5$

Watch Video Solution

82. Find the zero (root) of the polynomial in each of the following cases: (i)$h(x) = 2x$ (ii)

$p(x) = c\,x + d, \quad \neq 0$ (iii)$p(x) = ax, \ a \ \neq 0$

Watch Video Solution

83. If $f(x) = 2x^3 - 13x^2 + 17x + 12$ Then find

$(i) \quad f(2)(ii) \quad f(-3)(iii) \quad f(0)$

Watch Video Solution

84. Verify whether the indicated numbers are zeros of the polynomials corresponding to them in that cases: $f(x) = 3x + 1, \ x = \ -\frac{1}{3}$

Watch Video Solution

85. Verify whether the indicated numbers are zeros of the polynomials corresponding to them in that cases: $f(x) = x^2 - 1,\ x = 1,\ -1$

Watch Video Solution

86. Verify whether the indicated numbers are zeros of the polynomials corresponding to them in that cases: $g(x) = 3x^2 - 2,\ x = \frac{2}{\sqrt{3}},\ -\frac{2}{\sqrt{3}}$

Watch Video Solution

87. Verify whether the indicated numbers are zeros of the polynomials corresponding to them in that cases: $p(x) = x^3 - 6x^2 + 11x - 6,\ x = 1,\ 2,\ 3$

Watch Video Solution

88. Verify whether the following are zeroes of the polynomial, indicated against them. (i) $p(x) = 3x + 1, x = -\frac{1}{3}$ (ii) $p(x) = 5x - \pi, x = \frac{4}{5}$ (iii) $p(x) = x^2 - 1, x = 1, -1$ (iv) $p(x) = (x + 1)(x + 2), x = -1, 2$ (v)

$p(x) = x^2, x = 0$ (vi) $p(x) = lx + m, x = -\frac{m}{l}$

(vii)

Watch Video Solution

89. Verify whether the indicated numbers are zeros of the polynomials corresponding to them in that cases: $f(x) = x^2,\ x = 0$

Watch Video Solution

90. Verify whether the indicated numbers are zeros of the polynomials corresponding to them in that

cases: $f(x) = lx + m,\ x = -\frac{m}{l}$

Watch Video Solution

91. Verify whether the indicated numbers are zeros of the polynomials corresponding to them in that cases: $f(x) = 2x + 1,\ x = \frac{1}{2}$

Watch Video Solution

92. If $x = 2$ is a root of the polynomial $f(x) = 2x^2 - 3x + 7a,$ find the value of a

Watch Video Solution

93. If $x = -\frac{1}{2}$ is a zero of the polynomial $p(x) = 8x^3 - ax^2 - x + 2$, find the value of a

Watch Video Solution

94. If $x = 0$ and $x = -1$ are the roots of the polynomial $f(x) = 2x^3 - 3x^2 + ax + b$, find the value of a and b.

Watch Video Solution

95. Find the integral roots of the polynomial $f(x) = x^3 - 6x^2 + 11x - 6$

Watch Video Solution

96. Find rational roots of the polynomial $f(x) = 2x^3 + x^2 - 7x - 6$

Watch Video Solution

97. Let $p(x) = x^4 - 3x^2 + 2x + 5$. Find the remainder when $p(x)$ is divided by $(x - 1)$.

Watch Video Solution

98. Find the remainder when $p(y) = y^3 + y^2 + 2y + 3$ is divided by $y + 2$.

Watch Video Solution

99. Determine the remainder when the polynomial $p(x) = x^4 - 3x^2 + 2x + 1,$ is divided by $x - 1$

Watch Video Solution

100. Find the remainder when $p(x) = x^3 - ax^2 + 6x - a$ is divided by $(x - a)$.

Watch Video Solution

101. Find the remainder when the polynomial $f(x) = 2x^4 - 6x^3 + 2x^2 - x + 2$ is divided by $x + 2$

Watch Video Solution

102. Find the remainder when $p(x) = 4x^3 - 12x^2 + 14x - 3$ is divided by $g(x) = x - \frac{1}{2}$

Watch Video Solution

103. Find the remainder when $f(x) = x^3 - 6x^2 + 2x - 4$ is divided by $g(x) = 3x - 1.$

Watch Video Solution

104. Find the remainder when $f(x) = x^3 - 6x^2 + 2x - 4$ is divided by $g(x) = 3x - 1$.

Watch Video Solution

105. If the polynomials $ax^3 + 4x^2 + 3x - 4$ and $x^3 - 4x + a$ leave the same remainder when divided by $(x - 3)$, find the value of a.

Watch Video Solution

106. The polynomials $ax^3 + 3x^2 - 13$ and $2x^3 - 5x + a$ are divided by $x + 2$, if the remainder in each case is the same, find the value of a.

Watch Video Solution

107. Let R_1 and R_2 are the remainders when the polynomials $x^3 + 2x^2 - 5ax - 7$ and $x^3 + ax^2 - 12x + 6$ are divided by $x + 1$ and $x - 2$ respecti-vely. If $2R_1 + R_2 = 6$, find the value of a.

Watch Video Solution

Watch Video Solution

108. If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is a polynomial such that when it is divided by $x - 1$ and $x + 1$, the remainders are respectively 5 and 19. Determine the remainder when $f(x)$ is divided by $(x - 2)$.

Watch Video Solution

109. Check whether the polynomial $q(t) = 4t^3 + 4t^2 - t - 1$is a multiple of $2t + 1$

Watch Video Solution

110. $f(x) = x^3 + 4x^2 - 3x + 10,\ g(x) = x + 4$

divide f(x) with g(x) and find the remainder.

Watch Video Solution

111. On dividing the polynomial f (x) by the polynomial g (x) find the remainder with the help of remainder theorem and also confirm the result.

$f(x) = 4x^4 - 3x^3 - 2x^2 + x - 7, g(x) = x - 1$

Watch Video Solution

112. Find the remainder when $P(x) \div G(x)$

(i)

$P(x) = 2x^4 - 6x^3 + 2x^2 - x + 2; G(x) = (x + 2)$

(ii) $P(x) = 4x^3 + 4x^2 - x - 1; G(x) = (2x + 1)$

Watch Video Solution

113.

$f(x) = 4x^3 - 12x^2 + 14x - 3,\ g(x) = 2x - 1$

divide f(x) with g(x) and find the remainder.

Watch Video Solution

114. Find the remainder when f(x)=x 3 −6x 2 +2x−4 is divided by g(x)=1−2x.

Watch Video Solution

115. Find the remainder when $f(x) = x^4 - 3x^2 + 4$ is divided by $g(x) = x - 2$ is.

Watch Video Solution

116. Find the remainder when f(x)=9x^3-3x^2+x-5, is divided by g(x)=x-2/3

Watch Video Solution

117.

$f(x) = 3x^4 + 2x^3 - \frac{x^2}{3} - \frac{x}{9} + \frac{2}{27}, \; g(x) = x + \frac{2}{3}$

find the value of f(x)-g(x).

Watch Video Solution

118. If the polynomials $ax^3 + 3x^2 - 13$ and $2x^3 - 5x + a,$ when divided by $(x - 2)$ leave the same remainder, find the value of a .

Watch Video Solution

119. The polynomials $ax^3 + 3x^2 - 3$ and $2x^3 - 5x + a$ when divided by $(x - 4)$ leave the remainders $R_1 and R_2$ respectively. Find the values of a in each of the following cases, if $R_1 = R_2$ (ii) $R_1 + R_2 = 0\,(iii) 2R_1 - R_2 = 0$

Watch Video Solution

120. If the polynomials $ax^3 + 3x^2 - 13$ and $2x^3 - 5x + a,$ when divided by $(x - 2)$ leave the same remainder, find the value of a .

Watch Video Solution

121. Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by (i) $x + 1$ (ii) $x - \frac{1}{2}$ (iii) x (iv) $x + \pi$ (v) $5 + 2x$

Watch Video Solution

122. Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by (i) $x + 1$ (ii) $x - \frac{1}{2}$ (iii) x (iv) $x + \pi$ (v) $5 + 2x$

Watch Video Solution

123. Show that $(x-3)$ is a factor of the polynomial $x^3-3x^2+4x-12$

Watch Video Solution

124. Show that $(x-1)$ is a factor of $x^{10}-1$ and also of $x^{11}-1$.

Watch Video Solution

125. Show that $x+1$ and $2x-3$ are factors of $2x^3-9x^2+x+12$

Watch Video Solution

126. Without actual division prove that $2x^4 - 6x^3 + 3x^2 + 3x - 2$ is exactly divisible by $x^2 - 3x + 2$ is

Watch Video Solution

127. Find the value of a, if $x - a$ is a factor of $x^3 - a^2x + x + 2$

Watch Video Solution

128. Find the value of k, if $x+3$ is a factor of $3x^2+kx+6$.

Watch Video Solution

129. Determine the value of a for which the polynomial $2x^4-ax^3+4x^2+2x+1$ is divisible by $1-2x$.

Watch Video Solution

130. Find the value of a and b so that the polynomial $x^3-ax^2-13x+b$ has $(x-1)$ and

$(x+3)$ as factors.

Watch Video Solution

131. Find the values of a and b so that the polynomial x^3+10x^2+ax+b is exactly divisible by $x-1$ as well as $x-2$.

Watch Video Solution

132. For what values of a is $2x^3+ax^2+11x+a+3$ exactly divisible by $(2x-1)$?

Watch Video Solution

133. If $ax^3 + bx^2 + x - 6$ has $x + 2$ as a factor and leaves a remainder 4 when divided by $(x - 2)$, find the value of a and b.

Watch Video Solution

134. If both $x - 2$ and $x - \frac{1}{2}$ are factors of $px^2 + 5x + r$, show that $p = r$.

Watch Video Solution

135. If $x^2 - 1$ is a factor of $ax^4 + bx^3 + cx^2 + dx + e$, show that $a + c + e = b + d$

Watch Video Solution

136. Without actual division, prove that $2x^4 - 5x^3 + 2x^2 - x + 2$ is exactly divisible by $x^2 - 3x + 2$.

Watch Video Solution

137. Without actual division, prove that $x^4 + 2x^3 - 2x^2 + 2x - 3$ is exactly divisible by $x^2 + 2x - 3$.

Watch Video Solution

138. In each of the following polynomials, find the value of a if $x + a$ is a factor: $x^3 + ax^2 - 2x + a + 4$

Watch Video Solution

139. In each of the following polynomials, find the value of a if $x + a$ is a factor: $x^4 - a^2x^2 + 3x - a$

Watch Video Solution

140. Use factor theorem to verify that $x + a$ is a factor of $x^n + a^n$ for any odd positive integer.

Watch Video Solution

141. If $f(x) = x^4 - 2x^3 + 3x^2 - ax + b$ is a polynomial such that when it is divided by $x - 1$

and $x+1$, the remainders are respectively 5 and 19. Determine the remainder when $f(x)$ is divided by $(x-2)$.

Watch Video Solution

142. What must be subtracted from $4x^4-2x^3-6x^2+x-5$ so that the result is exactly divisible by $2x^2+x-1$

Watch Video Solution

143. What must be added to $x^4 + 2x^3 - 2x^2 + x - 1$ so that the result is exactly divisible by $x^2 + 2x - 3$.

Watch Video Solution

144. Use factor theorem to find whether polynomial g(x) is a factor of polynomial f(x) or, not:

$f(x) = x^3 - 6x^2 + 11x - 6; g(x) = x - 3$

Watch Video Solution

145.

$f(x) = 3x^4 + 17x^3 + 9x^2 - 7x - 10; g(x) = x + 5$

find the remainder when f(x) is divided with g(x)

Watch Video Solution

146. check whether $g(x)$ is a factor of $f(x)$ or not

$f(x) = x^5 + 3x^4 - x^3 - 3x^2 + 5x + 15,$

$g(x) = x + 3$

Watch Video Solution

147. $f(x) = x^3 - 6x^2 - 19x + 84,\ g(x) = x - 7$

find the value of f(x)-g(x).

Watch Video Solution

148. $f(x) = 3x^3 + x^2 - 20x + 12,\ g(x) = 3x - 2$

find the remainder when f(x) is divided with g(x).

Watch Video Solution

149. Use factor theorem to find whether polynomial g(x) is a factor of polynomial f(x) or, not:

$f(x) = 2x^3 - 9x^2 + x + 12,\ g(x) = 3 - 2x$

Watch Video Solution

150.

$f(x) = x^3 - 6x^2 + 11x - 6,\ g(x) = x^2 - 3x + 2$

find the remainder when f(x) is divided with g(x).

Watch Video Solution

151. Show that $(x - 2), (x + 3)$ and $(x - 4)$ are factors of $x^3 - 3x^2 - 10x + 24$.

Watch Video Solution

152. Show that $(x+4), (x-3) and (x-7)$ are factors of $x^3 - 6x^2 - 19x + 84$

Watch Video Solution

153. For what value of a is $(x-5)$ a factor of $x^3 - 3x^2 + ax - 10$?

Watch Video Solution

154. Find the value of a such that $(x-4)$ is a factor of $5x^3 - 7x^2 - ax - 28$

Watch Video Solution

155. Find the value of a, if $x+2$ is a factor of $4x^4 + 2x^3 - 3x^2 + 8x + 5a$

Watch Video Solution

156. Find the value of k if $x-3$ is a factor of $k^2x^3 - kx^2 + 3kx - k$

Watch Video Solution

157. Find the values of a and b, if $x^2 - 4$ is a factor of $ax^4 + 2x^3 - 3x^2 + bx - 4$.

Watch Video Solution

158. Find $\alpha \; and \; \beta$, if $x + 1 \; and \; x + 2$ are factors of $x^3 + 3x^2 - 2\alpha x + \beta$

Watch Video Solution

159. Find the values of $p \, and \, q$ so that $x^4 + px^3 + 2x^2 - 3x + q$ is divisible by $\left(x^2 - 1\right)$

Watch Video Solution

160. Find the values of $a \, and \, b$ so that $(x + 1) and \, (x - 1)$ are factors of $x^4 + ax^3 - 3x^2 + 2x + b$

Watch Video Solution

161. If $x^3 + ax^2 - bx + 10$ is divisible by $x^2 - 3x + 2$, find the values of a and b.

Watch Video Solution

162. If $(x + 1)$ and $(x - 1)$ are factors of $p(x) = ax^3 + x^2 - 2x + b$ find the values of a & b.

Watch Video Solution

163. What must be added to $x^3 - 3x^2 - 12x + 19$ so that the result is exactly divisibly by $x^2 + x - 6$

?

Watch Video Solution

164. What must be subtracted from $x^3 - 6x^2 - 15x + 80$ so that the result is exactly divisible by $x^2 + x - 12$?

Watch Video Solution

165. What must be added to $3x^3 + x^2 - 22x + 9$ so that the result is exactly divisible by $3x^2 + 7x - 6$?

Watch Video Solution

166. If $x-2$ is a factor of each of the following two polynomials, find the values of a in each case.

x^3-2ax^2+ax-1 and

$x^5-3x^4-ax^3+3ax^2+2ax+4$

Watch Video Solution

167. In each of the following two polynomials, find the value of a, if $x-a$ is a factor:

$x^6-ax^5+x^4-ax^3+3x-a+2$ and

$x^5-a^2x^3+2x+a+1$

Watch Video Solution

168. In each of the following two polynomials, find the value of a, if $x+a$ is a factor. i) $x^3+ax^2-2x+a+4$ ii)$x^4-a^2x^2+3x-a$

Watch Video Solution

169. Show that $(x-2)$ is a factor of the polynomial $f(x)=2x^3-3x^2-17x+30$ and hence factorize $f(x)$.

Watch Video Solution

170. Using factor theorem, factorize the polynomial

$x^3 - 6x^2 + 11x - 6$.

Watch Video Solution

171. Using factor theorem, factorize the polynomial

$x^4 + x^3 - 7x^2 - x + 6$

Watch Video Solution

172. Using factor theorem, factorize the polynomial

$x^4 - 2x^3 - 13x^2 + 14x + 24$

Watch Video Solution

173. Factorize : $2x^4 + x^3 - 14x^2 - 19x - 6$

Watch Video Solution

174. Factorize $x^3 + 13x^2 + 32x + 20,$ if it is given that $x + 2$ is its factor.

Watch Video Solution

175. Factorize $9z^3 - 27z^2 - 100z + 300$, if it is given that $(3z + 10)$ is a factor of it.

Watch Video Solution

176. using factor theorm factorize the following $x^3 + 6x^2 + 11x + 6$

Watch Video Solution

177. Using factor theorem, factorize each of the following polynomials : $x^3 + 2x^2 - x - 2$

Watch Video Solution

178. Using factor theorem factorize the following:

$x^3 - 6x^2 + 3x + 10$

Watch Video Solution

179. Using factor theorem, factorize each of the following polynomials : $x^4 - 2x^3 - 7x^2 + 8x + 12$

Watch Video Solution

180. Using factor theorem, factorize each of the following polynomials : $x^4 - 2x^3 - 7x^2 + 8x + 12$

Watch Video Solution

181. Using factor theorem, factorize the following polynomial : $x^4 + 10x^3 + 35x^2 + 50x + 24$

Watch Video Solution

182. Using factor theorem, factorize each of the following polynomials :

$2x^4 - 7x^3 - 13x^2 + 63x - 45$

Watch Video Solution

183. Using factor theorem, factorize each of the following polynomials : $3x^3 - x^2 - 3x + 1$

Watch Video Solution

184. Factorise $x^3 - 23x^2 + 142x - 120$.

Watch Video Solution

185. Using factor theorem, factorize the following polynomial : $y^3 - 7y + 6$

Watch Video Solution

186. Using factor theorem, factorize each of the following polynomials : $x^3 - 10x^2 - 53x - 42$

Watch Video Solution

187. using factor theorm factorize the following $y^3 - 2y^2 - 29y - 42$

Watch Video Solution

188. Using factor theorem, factorize each of the following polynomials : $x^3 - 10x^2 - 53x - 42$

Watch Video Solution

189. Favtorise$x^3 + 13x^2 + 32x + 20$

Watch Video Solution

190. Factorise: (i) $x^3 - 2x^2 - x + 2$ (ii) $x^3 - 3x^2 - 9x - 5$ (iii) $x^3 + 13x^2 + 32x + 20$ (iv) $2y^3 + y^2 - 2y - 1$

Watch Video Solution

191. $2y^3 + y^2 - 2y - 1$ factorize the polynomial

Watch Video Solution

192. $x^3 - 2x^2 - x + 2$ Factorize the polynomial,

Watch Video Solution

193. Factorize : $x^3 + 13x^2 + 31x - 45$ given that $x + 9$ is a factor

Watch Video Solution

194. Factorize: $4x^3 + 20x^2 + 33x + 18$ given that $2x + 3$ is a factor

Watch Video Solution

195. What is a Zero of a Polynomial ?

Watch Video Solution

196. If $x = \frac{1}{2}$ is a zero of the polynomial $f(x) = 8x^3 + ax^2 - 4x + 2$, find the value of a

Watch Video Solution

197. Write the remainder when the polynomial $f(x) = x^3 + x^2 - 3x + 2$ is a divided by $x + 1$

Watch Video Solution

198. Find the remainder when $x^3 + 4x^2 + 4x - 3$ is divided by x

Watch Video Solution

199. If $x + 1$ is a factor of $x^3 + a$, then write the value of a

Watch Video Solution

200. If $f(x) = x^4 - 2x^3 + 3x^2 - ax - b$ when divided by $x - 1$, the remainder is 6, then find the

value of $a + b$

Watch Video Solution

201. If $x - 2$ is a factor of $x^2 + 3ax - 2a$, then $a =$

(a) 2

(b) -2

(c) 1

(d) -1

Watch Video Solution

202. If $x^3 + 6x^2 + 4x + k$, is exactly divisible by $(x + 2)$, then the value of k is:

Watch Video Solution

203. If $x - a$ is a factor of $x^3 - 3x^2a + 2a^2x + b$, then the value of b is

(a) 0

(b) 2

(c) 1

(d) 3

Watch Video Solution

204. If $x^{140} + 2x^{151} + k$ is divisible by $x + 1$, then the value of k is=?

(a) 1

(b) -3

(c) 2

(d) -2

Watch Video Solution

205. If $x + 2$ and $x - 1$ are the factors of $x^3 + 10x^2 + mx + n,$ then the values of m and n are respectively=?

(a) 5 and -3

(b) 17 and -8

(c) 7 and -18

(d) 23 and -19

Watch Video Solution

206. Let $f(x)$ be a polynomial such that $f\left(-\frac{1}{2}\right)=0,$ then a factor of $f(x)$ is:?

(a)$2x-1$

(b) $2x+1$

(c)$x-1$

(d) $x+1$

Watch Video Solution

207. When $x^3 - 2x^2 + ax - b$ is divided by $x^2 - 2x - 3$, the remainder is $x - 6$. The values of $a\ and\ b$ are respectively. (a) $-2, -6$ (b) $2, -6$ (c) $-2, 6$ (d) $2, 6$

Watch Video Solution

208. One factor of $x^4 + x^2 - 20$ is $x^2 + 5$. The other factor is $x^2 - 4$ (b) $x - 4$ (c) $x^2 - 5$ (d) $x + 2$

Watch Video Solution

209. If $(x-1)$ is a factor of polynomial $f(x)$ but not of $g(x)$, then it must be a factor of (a) $f(x)g(x)$ (b) $-f(x)+g(x)$ (c)$f(x)-g(x)$ (d) $\{f(x)+g(x)\}g(x)$

Watch Video Solution

210. $(x+1)$ is a factor of x^n+1 only if

A. n is an odd integer

B. n is an even integer

C. n is a positive integer

D. n is a negative integer

Answer: A

Watch Video Solution

211. If $x+2$ is a factor of $x^2+mx+14$, then $m=$

A. 7

B. 2

C. 9

D. 14

Answer: C

Watch Video Solution

212. If $x-3$ is a factor of $x^2-ax-15$, then $a=$

(a) -2

(b) 5

(c) -5

(d) 3

Watch Video Solution

213. If x^2+x+1 is a factor of the polynomial $3x^3+8x^2+8x+3+5k$, then the value of k is

(a) 0

(b) $\frac{2}{5}$

(c) $\frac{5}{2}$

(d) -1

Watch Video Solution

214. If

$(3x-1)^7 = a_7x^7 + a_6x^6 + a_5x^5 + ... + a_1x + a_0$

then the value of $a_7 + a_6 . . . . . a_0$ =

Watch Video Solution

215. If $x^{51} + 51$ is divided by $x + 1$, the remainder is

(a) 0

(b) 1

(c) 49

(d) 50

Watch Video Solution

216. If $x + 1$ is a factor of the polynomial $2x^2 + kx,$ then $k =$

(a) -2

(b) -3

(c) 4

(d) 2

Watch Video Solution

217. If $x + a$ is a factor of $x^4 - a^2x^2 + 3x - 6a$, then $a =$

A. 0

B. 1

C. 9

D. -9

Answer: A

Watch Video Solution

218. Find the value of k, if $x - 1$ is a factor of $4x^3 + 3x^2 - 4x + k$.

Watch Video Solution

219. If both $x - 2$ and $x - \frac{1}{2}$ are factors of $px^2 + 5x + r$, show that $p = r$.

Watch Video Solution

220. If $x^2 - 1$ is a factor of $ax^4 + bx^3 + cx^2 + dx + e$, show that $a + c + e = b + d$

Watch Video Solution