MATHS

BOOKS - MODERN PUBLICATION

POLYNOMIALS

Example

1. Which of the following expression are polynomials

$x^3 - 7x + 3$

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2. Which of the following expression are polynomials

$3\sqrt{x} + 7$

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3. Which of the following expression are polynomials

$x + \frac{7}{x} + 1$

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4. Which of the following expression are polynomials

$3\sqrt{x} + 8$

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5. Which of the following expression are polynomials

x-7

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6. Which of the following expression are polynomials

0

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7. Write the degree of each of the followng polynomials

$2x - \sqrt{5}$

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8. Write the degree of each of the followng polynomials

$8x^4 - 37x + 6x^9$

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9. Write the degree of each of the followng polynomials

5

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10. Write the degree of each of the followng polynomials

9

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11. Write:

the coefficient of x^3 in $3x + x^2 - 6x^3 + x^4$

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12. Write:

the coefficient of x^2 in $\frac{\pi}{6}x^2 + 5x - 3$

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13. Write the degree of the followng polynomials

the coefficient of x^3 in $3x^2 - 5$

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14. Classify the following polynomials as linear, quadratic, cubic and biquadratic polynomials:

5x-2, $x^2 + x + 7$, $2x + 3x^3$, 5y, $z^2 + 1$, $7x^4 + 4x^3 + 7x - 2$

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15. Classify the following polynomials as polynomials in one variable, two variables, etc:

$x^2 - xy + 5y^2$

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16. Classify the following polynomials as polynomials in one variable, two variables, etc:

$x^2 - 2tx - x + 3$

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17. Classify the following polynomials as polynomials in one variable, two variables, etc:

$t^3 + 3t^2 + 7t - 9$

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18. Classify the following polynomials as polynomials in one variable, two variables, etc:

$xy + 2yz + 3zx$

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19. Write:

a binomial of degree 100

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20. Write:

a monomial of degree 25.

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21. Write:

a trinomial of degree 7.

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22. If $p(x) = 4x^2 - 3x + 6$, find p(0),p(4) and p(-5)

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23. Find the zero of the polynomial:

p(x)=x-4

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24. Find the zero of the polynomial:

$q(x) = 2x + 3$

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25. Find the zero of the polynomial:

$r(z) = ax + b, a \neq 0$

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26. Find the zero of the polynomial:

$s(x) = 5x$

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27. Verify that

6 is a zero of the polynomial p(x)=x-6

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28. Verify that

$\frac{2}{7}$ is a zero of the polynoial q(x)=2-7x

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29. Verify that

2 and -3 are zeroes of the polynomial

$r(x) = x^2 + x - 6$

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30. If x=2 is a zero of $p(x) = 2x^3 - 3x + 7k$ find the value of k.

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31. IF x=0 and x=2 are zeroes of

$p(x) = 2x^3 - 5x^2 + ax + b$, find the value of a and b.

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32. Find the remainder when the polynomial:

$f(x) = 3x^4 - 6x^2 - 8x + 2$ is divided by (x-2)

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33. Find the remainder when the polynomial:

$f(x) = x^3 - 6x^2 + 13x + 60$ is divided by (x+2)

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34. Find the remainder when the polynomial:

$f(x) = 4x^3 - 12x^2 + 11x - 5$ is divided by (2x-1)

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35. Check whether the polynomial:

$f(x) = 4x^3 + 4x^2 - x - 1$ is a multiple of (2x+1)

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36. If the polynomials:

$(2x^3 + ax^2 + 3x - 5)$ and $(x^3 + x^2 - 2x + a)$ leave the same

remainder when divided by x. find the value of a. also find the remainder in case.

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

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38. Show that (x-3) is a factor of:

$2x^3 + 7x^2 - 24x - 45.$

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39. Show that (x+2) is a factor $x^4 - x^2 - 12$

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40. Find the integral zeroes of the polynomial

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

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

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42. Find the value of k, if the polynomial:

$2x^4 + 3x^3 + 2kx^2 + 3x + 6$ is exactly divisible by (x+2).

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43. Find the value of k, if the polynomial:

$2x^4 - kx^3 + 2x + 1$ is exactly divisible by 1-2x.

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44. Without actual division, prove that:

$\left(2x^4 - 6x^3 + 3x^2 + 3x - 2\right)$ is exactly divisible by $\left(x^2 - 3x + 2\right)$

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45. Prove that (3x-2) is a factor of $\left(3x^3 + x^2 - 20x + 12\right)$

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

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47. If both (x-2) and $\left(x-\frac{1}{2}\right)$ are factors of px^2+5x+r, prove that p=r.

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48. What must be added to $x^4+2x^3-2x^2+x-1$ so that the resultant polynomial is divisible by $\left(x^2+2x-3\right)$?

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49. Factorize the following expressions

$5x^2-15xy$

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50. Factorize the following expressions

$6(2x+3y)^2 - 8(2x+3y)$

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51. Factorize the following expressions

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

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52. Factorize the following expressions

$x^2 + 5x + x + 5$

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53. Factorize the following expressions

$x^2 + y - xy - x$

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54. Factorize the following expressions

$$x^2 + \frac{1}{x^2} + 2 - 3x - \frac{3}{x}$$

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55. Factorize the following expressions

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

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56. Factorize the following expressions

$$a^2 + b^2 - 2(ab + bc - ac)$$

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57. Factorize the following expressions

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

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58. Factorize the following expressions

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

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59. Factorize the following expressions

$x^3 - x$

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60. Factorize the following expressions

$2x^5 - 32x$

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61. Factorize the following expressions

x(x-1)-y(y-1)

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62. Factorize the following expressions

$1 + 2ab - a^2 - b^2$

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63. Factorize the following expressions

$25x^2 - 10x + 1 - 36y^2$

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64. Factorize the following expressions

$4a^2 - 9b^2 - 2a - 3b$

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65. Factorize the following expressions

$x^4 + 4$

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66. Factorize the following expressions

$x^8 - y^8$

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67. Factorize the following expressions

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

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68. Factorize the following expressions

$x^2 + 3\sqrt{3}x - 30$

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69. Factorize the following expressions

$5\sqrt{5}x^2 + 30x + 8\sqrt{5}$

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70. Factorize the following expressions

$2(x+y)^2 - 9(x+y) - 5$

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71. Factorize

$y^3 + 13y^2 + 32y + 20$

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72. What are the possible expression for the length and breadth of a rectangle whose area is $25x^2 - 35x + 12$?

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73. Expand $(2a - b + c)^2$

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74. Factorize: $4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz$

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75. Evaluate: $(998)^2$

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76. Expand: $(4x + 3y)^3$

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77. Expand: $\left(2a - \frac{2}{a}\right)^3$.

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78. Evaluate: $(95)^3$

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79. Evaluate: $(998)^3$

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80. Factorize:

$x^3 + 81$

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81. Factorize:

$8x^3 + 64y^3$

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82. Factorize:

$8x^3 - 27y^3$

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83. Factorize:

$2x^7 - 128x$

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84. Factorize:

$a^6 - b^6$

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85. Factorize:

$8a^3 - b^3 - 4ax + 2bx$

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86. Factorize:

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

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87. Find the product

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

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88. Factorize

$x^3-8y^3+64z^3+24xyz$

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89. If a+b+c=6 and ab+bc+ca=1, then evaluate $a^3+b^3+c^3-3abc$

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90. Factorize: $a^3 - b^3 + 1 + 3ab$.

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

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

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

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

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95. Simplify:

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

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96. If $x^2 - 1$ is a factor of $px^4 + qx^3 + rx^2 + sx + t$ then show that p+r+t=q+s=0.

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97. Given that $ax^2 + bc + 6$ leaves the remainder 1 on division by 2x+1 and $2bx^2 + 6x + a$ leaves the remainder 2 on divisible by 3x-1. find a

and b.

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

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99. Using factor theorem, show that x-y,y-z,z-x are the factors of $x^2(y-z) + y^2(z-x) + z^2(x-y)$

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100. If $x^2 + \frac{1}{x^2} = 79$, evaluate $x^3 + \frac{1}{x^3}$

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101. In a particular section of class IX $\frac{1}{7}$ times the square of total no. of students planned to visit an orphange, $\frac{5}{9}$ times the total no. of students planned to visit historical monuments of India while 12 students decided to given their consent for teaching slum children for a week. using above information,express the total number of students of class as a polynomial.

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102. The students of four sectoins of class 9th donated collectively Rs 8281 for the Orphange child Fund for children's living. If each student donated as much money as the number of students who donated the money, how many students donated money for the organisation? what values of depicted by these students?

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103. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer:- $4x^2 - 3x + 7$

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104. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer:- $y^2 + \sqrt{2}$

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105. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer:- $3\sqrt{t} + t\sqrt{2}$

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106. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer:- $y + \frac{2}{y}$

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107. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer:- $x^{10} + y^3 + t^{50}$

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108. Write the coefficients of x^2 in each of the following: $2 + x^2 + x$

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109. Write the coefficients of x^2 in each of the following: $2 - x^2 + x^3$

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110. Write the coefficients of x^2 in each of the following: $\frac{\pi}{2}x^2 + x$

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111. Write the coefficients of x^2 in each of the following: $\sqrt{2x} - 1$

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

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113. Write the degree of each of the following polynomials

$5x^3 + 4x^2 + 7x$

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114. Write the degree of each of the following polynomials

$4 - y^2$

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115. Write the degree of each of the following polynomials

$5t - \sqrt{7}$

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116. Write the degree of each of the following polynomials

3?

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117. Classify the following is linear, quadratic and cubic polynomial

$x^2 + x$?

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118. Classify the following as linear, quadratic and cubic polynomial :

$x - x^3$.

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119. Classify the following as linear, quadratic and cubic polynomial :

$y + y^2 + 4$.

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120. Classify the following is linear, quadratic and cubic polynomial

$1 + x^2$

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121. Classify the following is linear, quadratic and cubic polynomial

3t+2?

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122. Classify the following is linear, quadratic and cubic polynomial

t^2

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123. Classify the following as linear, quadratic and cubic polynomial : $7x^3$.

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124. Find the value of the polynomial $5x - 4x^2 + 3$ at $x = 0$.

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125. Find the value of the polynomial $5x - 4x^2 + 3$ at $x = -1$.

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126. Find the value of the polynomial $5x - 4x^2 + 3$ at $x = 2$.

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127. Find $p(0), p(1)$ and $p(2)$ for the following polynomial : $p(y) = y^2 - y + 1$.

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128. Find $p(0), p(1)$ and $p(2)$ for the following polynomial : $p(t) = 2 + t + 2t^2 - t^3$.

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129. Find p(0), p(1) and p(4) for each of the following polynomials: $p(x) = x^3$

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130. Find p(0), p(1) and p(5) for each of the following polynomials: $p(x) = (x - 1)(x + 1)$

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131. Verify whether the following is zero of the polynomial, indicated against it : $p(x) = 3x + 1, x = -\frac{1}{3}$.

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132. Verify whether the following is zero of the polynomial, indicated against it : $p(x) = 5x - \pi, x = \frac{4}{5}$.

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133. Verify whether the following is zero of the polynomial, indicated against it : $p(x) = x^2 - 1, x = 1, -1$.

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134. Verify whether the following is zero of the polynomial, indicated against it : $p(x) = (x + 1)(x - 2), x = -1, 2$.

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135. Verify whether the following is zero of the polynomial, indicated against it : $p(x) = x^2, x = 0.$

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136. Verify whether the following is zero of the polynomial, indicated against it : $p(x) = lx + m, x = -\frac{m}{l}.$

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137. Verify whether the following is zero of the polynomial, indicated against it : $p(x) = 3x^2 - 1, x = -\frac{1}{\sqrt{3}}, \frac{2}{\sqrt{3}}.$

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138. Verify whether the following is zero of the polynomial, indicated against it : $p(x) = 2x + 1, x = \frac{1}{2}.$

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139. Find the zero of the polynomial in each of the following cases

p(x)=x+4

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140. Find the zero of the polynomial in each of the following cases

$p(x) = x - 5$

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141. Find the zero of the polynomial in each of the following cases

p(x)=2x-5

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142. Find the zero of the polynomial in each of the following cases

p(x)=3x-2

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143. Find the zero of the polynomial in each of the following cases

p(x)=8x

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144. Find the zero of the polynomial in each of the following cases

$p(x) = ax, a \neq 0$

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145. Find the zero of the polynomial in each of the following cases

p(x)=cx+d, c,$d \neq 0$, are real numbers.

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146. Find the remainder when $x^3 + 3x^2 + 3x + 1$ divided by

x+1

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147. Find the remainder when $x^3 + 3x^2 + 3x + 1$ divided by

$x - \frac{1}{2}$

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148. Find the remainder when $x^3 + 3x^2 + 3x + 1$ divided by

x-2

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149. Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by : $x + \pi$.

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150. Find the remainder when $x^3 + 3x^2 + 3x + 1$ is divided by : $5 + 2x$.

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151. Using Remainder Theoren, find the remainder from $x^3 - ax^2 + 2x - a$ is divided by x-a.

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152. Check whether 7 + 3x is a factor of $3x^3 + 7x$

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153. Determine which of the following polynomials has (x + 1) a factor:

$x^3 + x^2 + x + 1$

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154. Determine which of the following polynomials has (x+1) a factor:

$x^4 + x^3 + x^2 + x + 1$

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155. Determine which of the following polynomials has (x+1) a factor:

$x^4 + x^3 + x^2 + x + 1$

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156. Determine which of the following polynomials has (x + 1) a factor:

$x^3 - x^2 - (2 + \sqrt{2})x + \sqrt{2}$

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157. Use the Factor Theorem to determine whether g(x) is a factor of p(x) in each of the following cases:

$p(x) = 2x^3 + x^2 - 2x - 1, g(x) = x + 1$

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158. Use the Factor Theorem to determine whether g(x) is a factor of p(x) in each of the following cases:

$p(x) = x^3 + 3x^2 + 3x + 1, g(x) = x + 2$

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159. Use the Factor Theorem to determine whether g(x) is a factor of p(x) in each of the following cases:

$p(x) = x^3 - 4x^2 + x + 6, g(x) = x - 3$

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160. Find the value of k, if $x-1$ is a factor of $p(x)$ of the following case : $p(x)=x^2+x+k$.

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161. Find the value of k, if $x-1$ is a factor of $p(x)$ of the following case : $p(x)=2x^2+kx+\sqrt{2}$.

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162. Find the value of k, if $x-1$ is a factor of $p(x)$ of the following case : $p(x)=kx^2-\sqrt{2}x+1$.

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163. Find the value of k, if x - 4 is a factor of p(x) in each of the following cases: $p(x) = kx^2 - 3x + k$

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164. Factorise : $12x^2 - 7x + 1$.

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165. Factorise : $2x^2 + 7x + 3$.

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166. The factors of $6x^2 + 5x - 6$ are :

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167. Factorise : $3x^2 - x - 4$.

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168. Factorise : $x^3 - 2x^2 - x + 2$.

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169. Factorise : $x^3 - 3x^2 - 9x - 5$.

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170. Factorise : $x^3 + 13x^2 + 32x + 20$.

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171. Factorise : $2y^3 + y^2 - 2y - 1$.

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172. Use the suitable identity to find the following product : $(x + 4)(x + 10)$.

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173. Use the suitable identity to find the following product : $(x + 8)(x - 10)$.

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174. Use suitable identify to find the following products:

(3x+2)(3x-1)

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175. Use the suitable identity to find the following product : $\left(y^2+\frac{3}{2}\right)\left(y^2-\frac{3}{2}\right)$.

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176. Use the suitable identity to find the following product : $(3-2x)(3+2x)$.

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177. Evaluate the following product without multiplying directly : 103×107.

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178. Evaluate the following product without multiplying directly : 95×96.

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179. Evaluate the following product without multiplying directly : 104×96.

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180. Factorise the following using appropriate identities : $9x^2 + 6xy + y^2$.

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181. Factorise the following using appropriate identities : $4y^2 - 4y + 1$

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182. Factorise the following using appropriate identities : $x^2 - \frac{y^2}{100}$.

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183. Expand each of the following, using suitable identifies :

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

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184. Expand each of the following, using suitable identifies :

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

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185. Expand the following using suitable Identities : $(-2x+3y+2z)^2$.

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186. Expand the following using suitable Identities : $(3a-7b-c)^2$.

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187. Expand the following using suitable Identities : $(-2x+5y-3z)^2$.

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188. Expand the following using suitable Identities : $\left[\frac{1}{4}a-\frac{1}{2}b+1\right]^2$.

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189. Factorise : $4x^2 + 9y^2 + 16z^2 + 12xy - 24yz - 16xz.$

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190. Factorise : $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz.$

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191. Write the following cube in expanded : $(2x + 1)^3.$

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192. Write the following cube in expanded : $(2a - 3b)^3.$

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193. Write the following cube in expanded : $\left[\frac{3}{2}x+1\right]^3$.

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194. Write the following cube in expanded : $\left[x-\frac{2}{3}y\right]^3$.

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195. Evaluate the following using suitable identity : $(99)^3$.

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196. Evaluate the following using suitable identity : $(102)^3$.

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197. Evaluate: $(998)^3$

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198. Factorise each of the following: $8a^3 - b^3 - 12a^2b + 6ab^2$

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199. Factorise each of the following: $8a^3 - b^3 - 12a^2b + 6ab^2$

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200. Factorise the following : $27 - 125a^3 - 135a + 225a^2$.

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201. Factorise the following : $64a^3 - 27b^3 - 144a^2b + 108ab^2$.

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202. Factorise the following : $27p^3 - \frac{1}{216} - \frac{9}{2}p^2 + \frac{1}{4}p.$

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203. Verify : $x^3 + y^3 = (x + y)\left(x^2 - xy + y^2\right).$

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204. Verify : $x^3 - y^3 = (x - y)\left(x^2 + xy + y^2\right).$

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205. Factorise each of the following:

$27y^3 + 125x^3$

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206. Factorise the following : $64m^3 - 343n^3$.

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207. Factorise : $27x^3 + y^3 + z^3 - 9xyz$.

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208. Verify that

$$x^3 + y^3 + z^3 - 3xyz = \frac{1}{2}(x + y + z)\left[(x - y)^2 + (y - z)^2 + (z - x)^2\right]$$

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209. If $x + y + z = 0$, show that $x^3 + y^3 + z^3 = 3xyz$.

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210. Without actually calculating the cubes, find the value of each of the following: $(-12)^3 + (7)^3 + (5)^3$

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211. Without actually calculating the cubes, find the value of each of the following: $(28)^3 + (-15)^3 + (-13)^3$

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

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

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214. What are the possible expressions for the dimensions of the cuboids whose volumes are given below? Volume : $3x^2 - 12x$

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215. What are the possible expressions for the dimensions of the cuboids whose volumes are given below? Volume : $12ky^2 + 8ky - 20k$

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216. Which of the following expressions are polynomials? Justify your answer:

8?

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217. Which of the following expressions are polynomials? Justify your answer:

$\sqrt{3}x^2 - 2x$

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218. Which of the following expressions are polynomials? Justify your answer:

$1 - \sqrt{5}x$

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219. Which of the following expressions are polynomials? Justify your answer:

$$\frac{1}{5x^2} + 5x + 7$$

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220. Which of the following expressions are polynomials? Justify your answer:

$$\frac{(x-2)(x-4)}{x}$$

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221. Which of the following expressions are polynomials? Justify your answer:

$$\frac{1}{x+1}$$

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222. Which of the following expressions are polynomials? Justify your answer:

$$\frac{1}{7}a^3 - \frac{2}{\sqrt{3}}a^2 + 4a - 7$$

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223. Which of the following expressions are polynomials? Justify your answer:

$$\frac{1}{2x}$$

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224. A binomial can have atmost two terms.

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225. Every polynomial is a binomial.

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226. A binomial may have degree 5.

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227. Zero of a polynomial is always 0.

Watch Video Solution

228. A polynomial cannot have more than one zero.

Watch Video Solution

229. The degree of the sum of two polynomials each of degree 5 is always 5.

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230. Classify the following polynomials as polynomials in one variable, two variables, etc:

$x^2 - 2tx - x + 3$

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231. Classify the following polynomials as polynomials in one variable, two variables etc:

$y^3 - 5y$

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232. Classify the following polynomials as polynomials in one variable, two variables, etc:

$xy + 2yz + 3zx$

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233. Classify the following polynomials as polynomials in one variable, two variables, etc:

$x^2 - 2tx - x + 3$

Watch Video Solution

234. Determine the degree of each of the following polynomials

2x-1

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235. Determine the degree of each of the following polynomials

-10?

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236. Determine the degree of each of the following polynomials

$x^3 - 9x + 3x^5$

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237. Determine the degree of each of the following polynomials

$y^3(1 - y^4)$

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238. For the polynomial

$\frac{x^3+2x+1}{5}-\frac{7}{2}x^3-x^6$, write the degree of the polynomial?

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239. For the polynomial

$\frac{x^3+2x+1}{5}-\frac{7}{2}x^2-x^6$, write

the coefficient of x^3.

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240. For the polynomial

$\frac{x^3+2x+1}{5}-\frac{7}{2}x^2-x^6$, write

the coefficient of x^6

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241. For the polynomial

$\frac{x^3+2x+1}{5}-\frac{7}{2}x^2-x^6$, write

the constant term.

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242. Write the coefficient of x^2 in each of the following

$\frac{\pi}{6}x+x^2-1$

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243. Write the coefficient of x^2 in each of the following

$3x-5$

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244. Write the coefficient of x^2 in each of the following

(x-1)(3x-4)

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245. Write the coefficient of x^2 in each of the following

$(2x-5)\left(2x^2-3x+1\right)$

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246. Classify the following as a constant, linear, quadratic and cubic polynomials

$2-x^2+x^3$

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247. Classify the following as a constant, linear, quadratic and cubic polynomials

$3x^3$

Watch Video Solution

248. Classify the following as a constant, linear, quadratic and cubic polynomials

$5t - \sqrt{7}$

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249. Classify the following as a constant, linear, quadratic and cubic polynomials

$4 - 5y^2$

Watch Video Solution

250. Classify the following as a constant, linear, quadratic and cubic polynomials

3

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251. Classify the following as a constant, linear, quadratic and cubic polynomials

2+x

Watch Video Solution

252. Classify the following as a constant, linear, quadratic and cubic polynomials

$y^3 - y$

Watch Video Solution

253. Classify the following as a constant, linear, quadratic and cubic polynomials

$1 + x + x^2$

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254. Classify the following as a constant, linear, quadratic and cubic polynomials

t^2

Watch Video Solution

255. Classify the following as a constant, linear, quadratic and cubic polynomials

$\sqrt{2x - 1}$

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256. Give an example of a polynomial, which is:

monomial of degree 1

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257. Give an example of a polynomial, which is:

binomial of degree 20

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258. Give an example of a polynomial, which is:

trinomial of degree 2.

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259. Find the value of the polynomial $3x^3 - 4x^2 + 7x - 5$, when x=3 and also when x=-3.

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260. If $p(x) = x^2 - 4x + 3$ evaluate

$p(2) - p(-1) + p\left(\frac{1}{2}\right)$

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261. Find p(0),p(1),p(-2) for the following polynomal

$p(x) = 10x - 4x^2 - 3$

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262. Find p(0),p(1),p(-2) for the following polynomal

$p(y) = (y + 2)(y - 2)$

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263. Verify whether the following are True/false

-3 is a zero of x-3.

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264. Verify whether the following are True/false

$-\frac{1}{3}$ is a zero of 3x+1

Watch Video Solution

265. Verify whether the following are True/false

$-\frac{4}{5}$ is a zero of 4-5y

Watch Video Solution

266. Verify whether the following are True/false

0 and 2 are the zeroes of $t^2 - 2t$

Watch Video Solution

267. Verify whether the following are True/false

-3 is a zero of $y^2 + y - 6$

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268. Find the zeroes of the polynomial in each of the following

p(x)=x-4

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269. Find the zeroes of the polynomial in each of the following

g(x)=3-6x

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270. Find the zeroes of the polynomial in each of the following

q(x)=2x-7

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271. Find the zeroes of the polynomial in each of the following

h(y)=2y

Watch Video Solution

272. Find the zeroes of the polynomal

p(x)=$(x-2)^2-(x+2)^2$

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273. By actual division, find the quotient and the remainder when the first polynomial is divided by the second polynomial:

$x^4 + 1, x - 1$

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274. By remainder Theoren, find the remainder, when p(x) is divided by g(x) where

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

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275. By remainder Theoren, find the remainder, when p(x) is divided by g(x) where

$p(x) = x^3 - 3x^2 + 4x + 50, g(x) = x - 3$

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276. By remainder Theoren, find the remainder, when p(x) is divided by g(x) where

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

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277. By remainder Theoren, find the remainder, when p(x) is divided by g(x) where

$p(x) = x^3 - 6x^2 + 2x - 4, g(x) = 1 - \frac{3}{2}x.$

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278. Check whether p(x) is a multiple of g(x) or not:

$p(x) = x^3 - 5x^2 + 4x - 3, g(x) = x - 2$

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279. Check whether p(x) is a multiple of g(x) or not:

$p(x) = 2x^3 - 11x^2 - 4x + 5 \, ' g(x) = 2x + 1$

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280. Show that:

x+3 is a factor of $69 + 11x - x^2 + x^3$

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281. Show that:

2x-3 is a factor of $x + 2x^3 - 9x^2 + 12$

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282. Determine which of the following polynomial has (x-2) as a factor:

$3x^2 + 6x - 24$

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283. Determine which of the following polynomial has (x-2) as a factor:

$4x^2 + x - 2$

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284. Show that p-1 is a factor of $p^{10} - 1$ and also $p^{11} - 1$

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285. For what value of m is $x^3 - 2mx^2 + 16$ divisible by x+2?

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286. If x+2a is a factor of $x^5 - 4a^2x^3 + 2x + 2a + 3$ find a.

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287. Find the value of m so that 2x-1 be a factor $8x^4 + 4x^3 - 16x^2 + 10x + m$

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288. If x+1 is a factor of $ax^3 + x^2 - 2x + 4a - 9$ find the value of a

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289. Factorize:

$x^2 + 9x + 18$

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290. Factorise:

$6x^2 + 7x - 3$

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291. Factorize:

$2x^2 - 7x + 5$

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292. Factorize:

$8 - 2r - 2r^2$

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293. Factorize:

$2x^3 - 3x^2 - 17x + 30$

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294. Factorize:

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

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295. Factorize the following expressions

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

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296. Factorize:

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

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297. Using suitable identity, evaluate the following

103^3

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298. Using suitable identity, evaluate the following

101×102

Watch Video Solution

299. Using suitable identity, evaluate the following

999^2

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300. Factorize the following

$4x^2 + 20x + 25$

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301. Factorize the following

$9y^2 - 66yz + 121z^2$

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302. Factorize the following

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

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303. Factorize the following

$9x^2 - 12x + 3$

Watch Video Solution

304. Factorize the following

$9x^2 - 12x + 4$

Watch Video Solution

305. Expand the following

$(4a - b + 2c)^2$

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306. Expand the following

$(3a - 5b - c)^2$

Watch Video Solution

307. Factorize the following

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

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308. Factorize the following

$9x^2 + 4y^2 + 16z^2 + 12xy - 16yz - 24xz$

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309. Factorize the following

$25x^3 + 16y^2 + 4z^2 - 40zy + 16yz - 20xz$

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310. Factorize the following

$16x^2 + 4y^2 + 9z^2 - 16xy - 12yz + 24xz$

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311. If a+b+c=9 and ab+bc+ca=26, find the values of $a^2 + b^2 + c^2$

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312. Expand the following

$(3a - 2b)^3$

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313. Expand the following

$\left(\frac{1}{x} + \frac{y}{3}\right)^3$

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314. Expand the following

$\left(4 - \frac{1}{3x}\right)^3$

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315. Factorise the following

$1 - 64a^3 - 12a + 48a^2$

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316. Factorise the following

$8p^3 + \frac{12}{5}p\left[\hat{}\ 2 + \frac{6}{25}p + \frac{1}{125}\right.$

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317. Factorise the following

$1 + 64x^3$

Watch Video Solution

318. Factorise the following

$a^3 - 2\sqrt{2}b^3$

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319. Find the following products:

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

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320. Find the following products:

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

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321. Find the product

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

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322. Factorise the following

$a^3 - 8b^3 - 64c^3 - 24abc$

Watch Video Solution

323. Factorise the following

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

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324. Without actually calculating the cubes, find the value of:

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

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325. Without actually calculating the cubes, find the value of:

$$(0.2)^3-(0.3)^3+(0.1)^3$$

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326. Without finding the cubes factorise

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

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327. If x+y+4=0, find the value of $x^3+y^3-12xy+64$

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328. Find the value of:

$x^3 - 8y^3 - 36xy - 216$, when x=2y+6

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329. Give possible expressions for the length and breadth of the rectangle whose area is given by $4a^2 + 4a - 3$

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330. If the polynomials $az^3 + 4z^2 + 3z - 4$ are $z^3 - 4z + a$ leave the same remainder when divided by z-3, find the value of a.

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331. The polynomial $p(x) = x^4 - 2x^3 + 3x^2 + 3a - 7$ when divided by x+1 leaves the remainder 19. find the value of a. also find the remainder when p(x) is divided by x+2.

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332. If both (x-2) and $\left(x - \frac{1}{2}\right)$ are factors of $px^2 + 5x + r$, prove that p=r.

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333. Without actual division, prove that:

$\left(2x^4 - 6x^3 + 3x^2 + 3x - 2\right)$ is exactly divisible by $\left(x^2 - 3x + 2\right)$

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334. Simplify : $(2x+5)^2-(2x-5)^2$

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335. Multiply $x^2+4y^2+z^2+2xy+xz-2yz$ by (-z+x-2y).

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336. If a,b,c are all non-zero and a+b+c=0, prove that $\frac{a^2}{bc}+\frac{b^2}{ca}+\frac{c^2}{ab}=3.$

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337. If a+b+c=5 and ab+bc+ca=10, prove that $a^3+b^3+c^3-3abc=-25$

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338. Prove that

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

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Exercise

1. Which of the following expressions are polynomial

$x^2 - 5x + 7$

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2. Which of the following expressions are polynomial

$x^3 - 5x^2 + 9x + 11$

Watch Video Solution

3. Which of the following expressions are polynomial

$23\sqrt{2}$

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4. Which of the following expressions are polynomial

$x + \frac{5}{x} + 2$

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5. Which of the following expressions are polynomial

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

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6. Which of the following expressions are polynomial

Watch Video Solution

7. Which of the following expressions are polynomial

$\frac{5\pi}{6}$

Watch Video Solution

8. Which of the following expressions are polynomial

$3x^2 + 8x$

Watch Video Solution

9. Write the degree of each of the following polynomials

$3x - \sqrt{7}$

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10. Write the degree of each of the following polynomials

$8x^2 + 5x + \sqrt{11}$

Watch Video Solution

11. Write the degree of each of the following polynomials

$x^3 + 7x^2 + 9x + 13$

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12. Write the degree of each of the following polynomials

$x^4 + 2x^2 + 9$

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13. Write the degree of each of the following polynomials

7

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14. Write the degree of each of the following polynomials

π?

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15. Write:

coefficient of x in $x^3 + 7x^2 + 9x + 11$.

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16. Write:

coefficient of x^2 in $x^4 + 7x^3 + 9x^2 + 11$

Watch Video Solution

17. Write:

coefficient of x^3 in $x^4 + 5x^3 + 7x^2 + 9x + 11$

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18. Write:

coefficient of x^4 in $7x^2 + 9x + 11x^4 + 13$

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19. Classify the following polynomials as linear, quadratic, cubic and biquadratic polynomials

3x-5?

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20. Classify the following polynomials as linear, quadratic, cubic and biquadratic polynomials

$x^2 + 3x + 7$

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21. Classify the following polynomials as linear quadratic, cubic and biquadratic polynomials

$3x + 5x^3$

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22. Classify the following polynomials as linear quadratic, cubic and biquadratic polynomials

5z

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23. Classify the following polynomials as linear quadratic, cubic and biquadratic polynomials

$t^2 + 9$

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24. Classify the following polynomials as linear quadratic, cubic and biquadratic polynomials

$7x^4 + 5x^3 + 7x^2 - 2$

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25. Which of the following expressions are polynomial in one variable and which are not? Give reasons your answer

$3x^2 - 4x + 9$

Watch Video Solution

26. Which of the following expressions are polynomial in one variable and which are not? Give reasons your answer

$y^2 + \sqrt{3}$

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27. Which of the following expressions are polynomial in one variable and which are not? Give reasons your answer

$3\sqrt{t} + t\sqrt{5}$

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28. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer:- $y + \frac{2}{y}$

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29. Which of the following expressions are polynomials in one variable and which are not? State reasons for your answer:- $x^{10} + y^3 + t^{50}$

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30. Give an example of a monomial of degree 11

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31. Give an example of a binomial of degree 23.

Watch Video Solution

32. Give an example of a trinomial of degree 7

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33. If $p(x) = 4 + 3x - x^2 + 5x^3$, find

p(0)?

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34. If $p(x) = 4 + 3x - x^2 + 5x^3$, find

p(2)?

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35. If $p(x) = 4 + 3x - x^2 + 5x^3$, find

p(-1)?

Watch Video Solution

36. If p(x)=$5 - 4x + 2x^2$, find

p(2)?

Watch Video Solution

37. If p(x)=$5 - 4x + 2x^2$, find

p(-2)?

Watch Video Solution

38. If p(x)=$5 - 4x + 2x^2$, find

p(4)?

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39. Find the zeroes of the polynomial:

p(x)=x-4

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40. Find the zeroes of the polynomial:

$q(x) = x + 7$

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41. Find the zeroes of the polynomial:

r(x)=3x-4

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42. Find the zeroes of the polynomial:

s(x)=5-4x

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43. Find the zeroes of the polynomial:

t(x)=px, $p \neq 0$

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44. Find the zeroes of the polynomial:

$f(x) = p + qx(q \neq 0)$

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45. Verify that:

-5 is a zero of the polynomial p(x)=x+5?

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46. Verify that:

$-\frac{1}{2}$ is a zero of the polynomial q(x)=2x+3

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47. Verify that

$\frac{2}{7}$ is a zero of the polynoial q(x)=2-7x

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48. Verify that:

2 and 3 are zeroes of the polynomial:

p(x)=(x-2)(x-3)

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49. Verify that:

0 and 4 are zeroes of the polynomial:

$q(x) = x^2 - 4x$

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

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

Watch Video Solution

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

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53. Using Remainder Theoren, find the remainder from

$x^3 - 6x^2 + 9x + 3$ is divided by x-1

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54. Using Remainder Theoren, find the remainder from

$x^3 - ax^2 + 2x - a$ is divided by x-a.

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55. Using Remainder Theoren, find the remainder from

$4x^4 - 3x^3 - 2x^2 + x - 7$ is divided by x-1.

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56. Using Remainder Theoren, find the remainder from

$x^3 + 4x^2 - 3x + 10$ is divided by x+4.

Watch Video Solution

57. Using Remainder Theoren, find the remainder from

$2x^4 + 6x^3 + 2x^2 + x - 8$ is divided by x+3.

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58. Using Remainder Theoren, find the remainder from

$x^3 - 6x^2 + 2x - 4$ is divided by 3x-1.

Watch Video Solution

59. Using Remainder Theoren, find the remainder from

$81x^4 + 54x^3 - 9x^2 - 3x + 2$ is divided by 3x+2.

Watch Video Solution

60. The polynomial $\left(ax^3+3x^2-3\right)$ and $\left(2x^3-5x+a\right)$ when divided by (x-4) leave the same remainder. Find the value of a.

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61. The polynomials $\left(ax^3+4x^2+3x-4\right)$ and $\left(x^3-4x+a\right)$ when divided by (x-3) leave the same remainder. Find the value of a.

Watch Video Solution

62. The polynomials $\left(ax^3+3x^2-13\right)$ and $\left(2x^3-5x+a\right)$ when divided by (x+2) leave the same remainder. Find the value of a.

Watch Video Solution

63. The polynomials $f(x)=x^4-2x^3+3x^2-ax+b$ when divided by (x-1) and (x+1) leaves remainder 5 and 19 respectively. Find the value

of a and b hence, find the remainder when f(x) is divided by (x-2)

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64. The polynomal $f(x) = ax^3 + 3x^2 - 3$ and $g(x) = 2x^3 - 5x + a$ when divided by (x-4) leave remainders R_1 and R_2 respectively. Find the value of a when:

$R_1 = R_2$

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65. The polynomal $f(x) = ax^3 + 3x^2 - 3$ and $g(x) = 2x^3 - 5x + a$ when divided by (x-4) leave remainders R_1 and R_2 respectively. Find the value of a when:

$R_1 + R_2 = 0$

Watch Video Solution

66. The polynomal $f(x) = ax^3 + 3x^2 - 3$ and $g(x) = 2x^3 - 5x + a$ when divided by (x-4) leave remainders R_1 and R_2 respectively. Find the value of a when:

$2R_1 - R_2 = 0$

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67. Prove that:

(x-3) is a factor of $x^3 + x^2 - 17x + 15$.

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68. Prove that:

(x-1) is a factor of $2x^4 + 9x^3 + 6x^2 - 11x - 6$

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69. Prove that:

(x+5) is a factor of $x^3 + x^2 + 3x + 115$

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70. Prove that:

(x+3) is a factor of $x^5 + 3x^4 - x^3 - 3x^2$

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71. Prove that:

$(3x - 2)$ is a factor of $3x^3 + x^2 - 20x + 12$

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72. Prove that:

(x-1) is a factor of $2x^4 + 9x^3 + 6x^2 - 11x - 6$

Watch Video Solution

73. Prove that:

$(x - \sqrt{2})$ is a factor of $(7x^2 - 4\sqrt{2}x - 6)$

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74. Prove that:

$(x + \sqrt{2})$ is a factor of $(2\sqrt{2}x^2 + 5x + \sqrt{2})$

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75. Prove that:

(x+1) and (2x-3) are factors of $2x^3 - 9x^2 + x + 12$

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76. Find the integral zeroes of the polynomial:

$p(x) = x^3 + 6x^2 + 11x + 6$

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77. Find the value of k if:

(x-k) is a factor of $x^3 - k^2x + x + 2$

Watch Video Solution

78. Find the value of k if

(x+3) is a factor of $3x^3 + kx + 6$

Watch Video Solution

79. Prove that $\left(x^3 - 3x^2 - 13x + 15\right)$ is exactly divisible by $x^2 + 2x - 3$

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80. Prove that (x-1) is a factor of $x^{10} - 1$ and $x^{11} - 1$

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81. Find the value of a and b so that the polynomial

$x^3 - ax^2 - 13x + b$ has (x-1) and (x+3)as factor.

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

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83. If $\left(x^2-1\right)$ is a factor of $ax^4+bx^3+cx^2+dx+e$ if that a+c+e=b+d=0

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84. If both (x+1) and (x-1) are factors of ax^3-2x+b, find the values of a and b.

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85. find α and β if (x+1) and (x+2) are factors $x^3+3x^2-2\alpha x+\beta$

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86. What must be added to $3x^3+x^2-22x+9$ so the result is exactly divisible by $3x^2+7x-12$.

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87. What must be substracted from $x^3 - 6x^2 - 15x + 2$ is so that the result is exactly divisible by $x^2 + x + 2$

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88. Factorize the following expressions

$18x^2y - 24xyz$

Watch Video Solution

89. Factorize the following expressions

$4(x + y) - 6(x + y)^2$

Watch Video Solution

90. Factorize the following expressions

$8(3a-2b)^2-10(3a-2b)$

Watch Video Solution

91. Factorize the following expressions

$ax-5b+ab-5x$

Watch Video Solution

92. Factorize the following expressions

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

Watch Video Solution

93. Factorize the following expressions

$p^2+pq(q+1)+q^3$

Watch Video Solution

94. Factorize the following expressions

$a(a-2b-c)+2bc$

Watch Video Solution

95. Factorize the following expressions

$x^2-(a+b)x+ab$

Watch Video Solution

96. Factorize the following expressions

$x^2+\frac{1}{x^2}-2-3x+\frac{3}{x}$

Watch Video Solution

97. Factorize the following expressions

$4a^2 + 12ab + 9b^2 - 8a - 12b$

Watch Video Solution

98. Factorize the following expressions

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

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99. Factorize the following expressions

$a^2x^2 + (ax^2 + 1) + a$

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100. Factorize the following expressions

$27a^2 - 48b^2$

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101. Factorize the following expressions

$20x^2 - 45$

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102. Factorize the following expressions

$(p+q)^3 - p - q$

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103. Factorize the following expressions

$x^2 - y^2 + 6y - 9$

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104. Factorize the following expressions

$x^4 - 625$

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105. Factorize the following expressions

$x^2 + 3\sqrt{3}x + 6$

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106. Factorize the following expressions

$4\sqrt{3}x^2 + 5x - 2\sqrt{3}$

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107. Factorize the following expressions

$7\sqrt{2}x^2 - 10x - 4\sqrt{2}$

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108. Factorize the following expressions

$9(x-2y)^2-4(x-2y)-13$

Watch Video Solution

109. Factorize the following expressions

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

Watch Video Solution

110. Factorize the following expressions

x^3+x^2-4x-4

Watch Video Solution

111. Factorize the following expressions

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

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112. Factorize the following expressions

$(x^2-4x)(x^2-4x-1)-20$

Watch Video Solution

113. Factorize the following expressions

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

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114. Factorize the following expressions

$7(x-2y)^2-25(x-2y)-12$

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115. Give possible expressions for the length and breadth of the rectangle having $35x^2 + 13x - 12$ as its area.

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116. What are the possible expressions for its dimensions of the cuboid whose volume $3y^2 - 12y$?

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117. Expand:

$(x + 2y + 5z)^2$

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118. Expand:

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

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119. Expand:

$(2x - 5y - 7z)^2$

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120. Expand:

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

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121. Factorise $4x^2 + y^2 + z^2 - 4xy - 2yz + 4xz$.

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122. Factorise : $2x^2 + y^2 + 8z^2 - 2\sqrt{2}xy + 4\sqrt{2}yz - 8xz.$

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123. Factorize:

$25x^2 + 4y^2 + 9z^2 - 20xy - 12yz + 30xz$

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124. Evaluate

$(92)^2$

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125. Evaluate

$(997)^2$

Watch Video Solution

126. Expand:

$(3a + 2)^3$

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127. Expand:

$(4x + 5y)^3$

Watch Video Solution

128. Expand:

$$\left(\frac{2}{3}a+1\right)^3$$

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129. Expand:

$$(5x-3y)^3$$

Watch Video Solution

130. Expand:

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

Watch Video Solution

131. Expand:

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

Watch Video Solution

132. Evaluate

$(106)^3$

Watch Video Solution

133. Evaluate:

$(999)^3$

Watch Video Solution

134. Factorize the following expressions

$x^3 + 64$

Watch Video Solution

135. Factorize the following expressions

$8x^3 + 125y^3$

Watch Video Solution

136. Factorize the following expressions

$1 + 27x^3$

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137. Factorize the following expressions

$125x^3 + \frac{1}{8}$

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138. Factorize the following expressions

$\frac{1}{64} + 216x^3$

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139. Factorize the following expressions

$x^3 + 0.008$

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140. Factorize the following expressions

$16a^4 + 54a$

Watch Video Solution

141. Factorize the following expressions

$x^5 + x^2$

Watch Video Solution

142. Factorize the following expressions

$7x^3 + 56y^3$

Watch Video Solution

143. Factorize the following expressions

$a^6 + b^6$

Watch Video Solution

144. Factorize the following expressions

$2x^3 + 16y^3 - 5x - 10y$

Watch Video Solution

145. Factorize the following expressions

$x^3 - 64y^3$

Watch Video Solution

146. Factorize the following expressions

$1 - 27a^3$

Watch Video Solution

147. Factorize the following expressions

$64a^3 - 343$

Watch Video Solution

148. Factorize the following expressions

$8x^3 - \frac{1}{27b^3}$

Watch Video Solution

149. Factorize the following expressions

$x^3 - 0.064$

Watch Video Solution

150. Factorize the following expressions

$x - 8xy^3$

Watch Video Solution

151. Factorize the following expressions

$32x^4 - 500x$

Watch Video Solution

152. Factorize the following expressions

$3a^7b - 81a^4b^4$

Watch Video Solution

153. Factorize the following expressions

$x^6 - y^6$

Watch Video Solution

154. Factorize the following expressions

$x^6 - 729$

Watch Video Solution

155. Factorize the following expressions

$$x^3 - \frac{1}{x^3} - 2x + \frac{2}{x}$$

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156. Factorize the following expressions

$$x^3 + 3x^2y + 3xy^2 + y^3 - 8$$

Watch Video Solution

157. Factorize the following expressions

$$x^6 - 7x^3 - 8$$

Watch Video Solution

158. Factorize the following expressions

$$x^3 + 8y^3 + 64z^3 - 24xyz$$

Watch Video Solution

159. Factorize the following expressions

$1 + y^3 + 8z^3 - 6yz$

Watch Video Solution

160. Factorize the following expressions

$125 - 8x^3 - 27y^3 - 90xy$

Watch Video Solution

161. Factorize the following expressions

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

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162. Find the following expressions

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

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163. Find the following expressions

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

Watch Video Solution

164. Find the following expressions

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

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165. Find the following expressions

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

Watch Video Solution

166. Evaluate:

$48^3 - 30^3 - 18^3$

Watch Video Solution

167. Without actually calculating the cubes, find the value of:

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

Watch Video Solution

168. Evaluate

$(0.2)^3 - (0.3)^3 + (0.1)^3$

Watch Video Solution

169. Factorize:

$(3a-2b)^3+(2b-5c)^3+(5c-3a)^3$

Watch Video Solution

170. Factorize:

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

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171. If x+y+4=0, find the value of $x^3+y^3-12xy+64$

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172. If a+b+c=9 and ab+bc+ca=26, find the value of:

$a^3+b^3+c^3-3abc.$

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

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174. If x-y=5 and xy=12, find the value of $x^2 + y^2$

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

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

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

Watch Video Solution

178. Define zero polynomial.

Watch Video Solution

179. State Remainder and Factor Theorems.

Watch Video Solution

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

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

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182. Find the remainder when $x^3 + 4x^2 + 4x - 5$ is divided by x=0.

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183. State that $y^3 + 5y + \sqrt{y}$ is a polynomial or not.

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184. A binomial can have degree more than 2.

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185. Number of zeroes of a polynomial cannot exceed its degree.

Watch Video Solution

186. $(30)^3 - (18)^3 - (12)^3 = 19450.$

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187. Polynomial of different degrees cannot be added.

Watch Video Solution

188. Factorize the given expression

$a - b - a^3 + b^3$

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189. The value of the polynomial $4x - 7x^2 + 5x^3 + 4$ at x=-1 is 10

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190. Zeroes of $x^2 - 5x$ are 0 and -5.

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191. $\sqrt{2}$ is a polynomial of degree 0.

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192. If 'a' is a zero of the polynomial p(x), then p(a)=1.

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193. $(a+b)^2+(a-b)^2$=.....

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194. Factors of x^2-3x+2 are.....

Watch Video Solution

195. $27x^3+8y^3=(3x+2y)\ldots\ldots\ldots\ldots$

Watch Video Solution

196. The value of $(249)^2-(248)^2$ is.....

Watch Video Solution

197. $\sqrt{3}$ is a polynomal of degree .....

Watch Video Solution

198. $(30)^3 - (18)^3 - (12)^3 = 19450.$

Watch Video Solution

199. $\frac{(0.137)^3 + (0.113)^3}{(0.137)^2 - (0.137)(0.113) + (0.113)^2} =$

Watch Video Solution

200. $(0.9x + 0.7y)\left(0.81x^2 - 0.63xy + 0.49^2\right) =$.....

Watch Video Solution

201. $(185)^2 - (115)^2 =$ .....

Watch Video Solution

202. Volume of a cuboic is $7x^2 - 56x + 105$ cubic units then the possible dimensions of the cuboid are .....,.....and.....given that x>5.

Watch Video Solution

203. Which of the following is a polynomial?

A. $3\sqrt{y} + 4$

B. y

C. $\sqrt{y} - 3$

D. $\frac{1}{\sqrt{y}} + 7$

Answer:

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204. Which of the following is a linear polynomial?

A. $x + x^2$

B. $5x^2 - x + 3$

C. $x + 1$

D. $x + \frac{1}{x}$

Answer:

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205. Degree of zero polynomial is

A. 0

B. 1

C. Not defined

D. None of these

Answer:

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206. The factors of $x^3 - 1 + y^3 + 3xy$ are

A. $(x - 1 + y)(x^2 + 1 + y^2 + x + y - xy)$

B. $(x - 1 + y)(x^2 - 1 - y^2 + x + y + xy)$

C. $(x + y - 1)(x^2 + y^2 + 1 - xy - x - y)$

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

Answer:

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

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

B. $(x+1)(x+2)(x+3)$

C. $\left(x^2-6\right)(x-1)$

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

Answer:

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208. 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. 0

C. (a-b)(b-c)(c-a)

D. None of these

Answer:

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209. The value of $\frac{(2.3)^3 - (0.027)}{(2.3)^2 + 0.69 + 0.09}\Bigg)$ is

A. 2

B. 2.327

C. 3

D. 2.273

Answer:

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210. If p(x)=x+4, then p(x)+p(-x)

A. 0

B. 2x

C. 4

D. 8

Answer:

Watch Video Solution

211. If $\left(x^2+kx-3\right)=(x-3)(x+1)$ then k=

A. 2

B. 3

C. -2

D. -1

Answer:

Watch Video Solution

212. When $\left(x^{31}+31\right)$ is divided by (x+1), the remainder is

A. 0

B. 1

C. 30

D. 31

Answer:

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213. Find the remainder when the polynomial:

$f(x)=4x^3-12x^2+11x-5$ is divided by (2x-1)

A. 0

B. -5

C. -2

D. 2

Answer:

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

A. 2

B. -2

C. -1

D. 1

Answer:

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215. If $x^3 + 6x^2 + 4x + k$ is exactly divisible by x+2 then k=

A. -6

B. -8

C. -7

D. -10

Answer:

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

A. 1

B. 2

C. -3

D. -2

Answer:

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217. Let f(x) be a polynomial such that $f\left(-\frac{1}{2}\right)=0$

A. 2x-1

B. x-1

C. 2x+1

D. x+1

Answer:

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218. One factor of $x^4 + x^2 - 20$ is $x^2 + 5$ the other factor is:

A. $x^2 - 4$

B. $x^2 - 5$

C. x-4

D. x+2

Answer:

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219. 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)

Answer:

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220. (x+1) is a factor of the polynomial

a. $x^3 - 2x^2 + x + 2$

b. $x^3 + 2x^2 - x - 2$

c. $x^3 + 2x^2 + x - 2$

d. $x^3 + 2x^2 - x + 2$

A. $x^{23} - 2x^2 + x + 2$

B. x^3+2x^2-x-2

C. $x^3 + 2x^2 + X - 2$

D. $x^3 + 2x^2 - x + 2$

Answer:

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221. $6x^2 + 17x + 5$=

A. (2x+1)(3x+5)

B. (6x+5)(x+1)

C. (2x+5)(3x+1)

D. none of these

Answer:

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222. If (x+5) is a factor of $p(x) = x^3 - 20x + 5k$, then k=

A. -5

B. 3

C. 5

D. -3

Answer:

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223. If $\frac{x}{y}+\frac{y}{x}=-1$ where $x \neq 0$ and $y \neq 0$ then the value of $\left(x^3-y^3\right)$ is

A. 1

B. 0

C. -1

D. $\frac{1}{2}$

Answer:

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224. The value of $(369)^2 - (368)^2 = ?$

A. 1

B. 37

C. 81

D. 737

Answer:

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225. The coefficient of x in the expansion of $(x+3)^3$ is

A. 1

B. 18

C. 9

D. 27

Answer:

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

A. -2

B. 4

C. -3

D. 2

Answer:

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227. If $x^2 - 1$ is a factor of $ax^4 + bx^3 + cx^2 + dx + e$, then

A. a+c+e=b+d

B. a+b+e=c+d

C. b+c+d=a+e

D. a+b+c=d+e

Answer:

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228. For some integer m, every even integer is of the form:

A. m

B. m+1

C. 2m

D. 2m+1

Answer:

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229. For some integer q, every odd integer is of the form

A. q

B. q+1

C. 2q

D. 2q+1

Answer:

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230. $n^2 - 1$ is divisible by 8, if n is

A. 1) an integer

B. 2) a natural number

C. 3) an odd number

D. 4) an even integer

Answer:

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231. If the HCF of 65 and 117 is expressible in the form 65m-117, then the value of m is

A. 4

B. 2

C. 1

D. 3

Answer:

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232. The largest number which divides 70 and 125, leaving remainders 5 and 8 respectively, then HCF(a,b) is

A. 13

B. 65

C. 875

D. 1750

Answer:

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233. If two positive integers p and q can be expression as $p = ab^2$ and $q = a^3$,a,b being prime numbers than LCM(p,q) is

A. ab

B. a^2b^2

C. a^3b^2

D. a^3b^2

Answer:

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234. The product of a non-zero rational and irrational number is

A. always irrational

B. always rational

C. rational or irrational

D. one

Answer:

Watch Video Solution

235. The least number that is divisible by all the numbers from 1 to 10 is

A. 10

B. 100

C. 504

D. 2520

Answer:

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236. The decimal expansion of the rational number $\frac{14587}{1250}$ will terminate after

A. one decimal place

B. two decimal places

C. three decimal places

D. four decimal places

Answer:

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237. Find the zeroes of the polynomial $x^2 - 5x$

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238. Evaluate: $(a-b)^3 + (b-c)^3 + (c-a)^3$

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239. Using Remainder theorem, find the remainder when $4x^3 - 12x^2 + 11x - 5$ is divided by (2x-1)

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240. Using factor theorem, prove that x-y is a factor of $x(y^2 - z^2) + y(z^2 - x^2) + z(x^2 - y^2)$

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241. Show that p-1 is a factor of $p^{10} - 1$ and also $p^{11} - 1$

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242. If x+2a is a factor of $x^5 - 4a^2x^3 + 2x + 2a + 3$ find a.

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243. Without actually calculating the cubes, find the value of:

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

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

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245. Find the integral zeroes of the polynomial:

$p(x) = x^3 + 6x^2 + 11x + 6$

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246. If $x^2 + \frac{1}{x^2} = 79$, evaluate $x^3 + \frac{1}{x^3}$

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247. Using factor theorem factorise $p(x) = x^3 - 23x^2 + 142x - 120$

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