MATHS

BOOKS - OSWAL PUBLICATION

POLYNOMIALS

Example

1. Divide : $(x^2 - 4x + 3)$ by (x - 1) and verify the division algorithm.

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2. Divide the polynomical $6x^4 - 44x^2 + 6x - 3$ by the polynomial $x^2 - 3x + 1$ and verify the division algorithm.

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Self Assessment A Short Answer Type Quesitons I

1. Divide $2x^2 + 3x - 1$ by x +1 and find the remainder.

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2. Divide $2x^3 - 5x^2 - 8x + 15$ by x-3.

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Self Assessment B Short Answer Type Quesitons Ii

1. Divide $x^3 - 12x^2 + 0x - 42$ by $x^2 - 2x + 1$.

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Self Assessment C Long Answer Type Quesitons

1. Prove that $2x^4 - 9x^3 + 21x^2 - 26x + 12$ is completely divisible by 2x-3.

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Self Assessment Objective Type Questions A Multiple Questions

1. If α and β are the roots of the polynomial $ax^2 - bx + c$, where $(a \neq 0)$,the value of $\alpha + \beta$ is

A. $-\frac{b}{a}$

B. $\frac{b}{a}$

C. $\frac{a}{b}$

D. $-\frac{a}{b}$

Answer:

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2. The sum of the zeroes of the polynomial $2x^2 - 8x + 6$ is :

A. -3

B. 3

C. -4

D. 4

Answer: D

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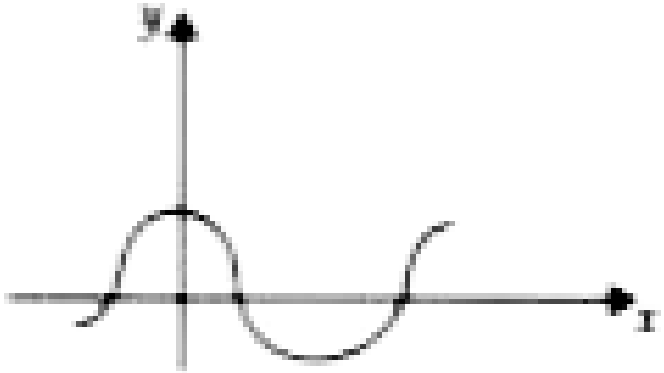
3. The following figure shows the graph of y= p(x) , where p(x) is a polynomial in variable x.The number of zeroes of the polynomial p(x) is .



A. 1

B. 3

C. 5

D. 4

Answer: B

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Self Assessment Objective Type Questions B Fill In The Blanks

1. If the quadratic polynomial is $ax^2 + bx + c$, then product of zeroes is ..... .

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2. All zeroes of f(x) $= x^2 - 2x$ are _____.

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3. If one of the zeroes of quadratic polynomial $x^2 - 2x + k$ is 2, then value of k is _____.

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Self Assessment Objective Type Questions C Very Short Answer Type Questions

1. For what value of k , -2 is a zero of the polynomial $3x^2 + 4x + 2k$?

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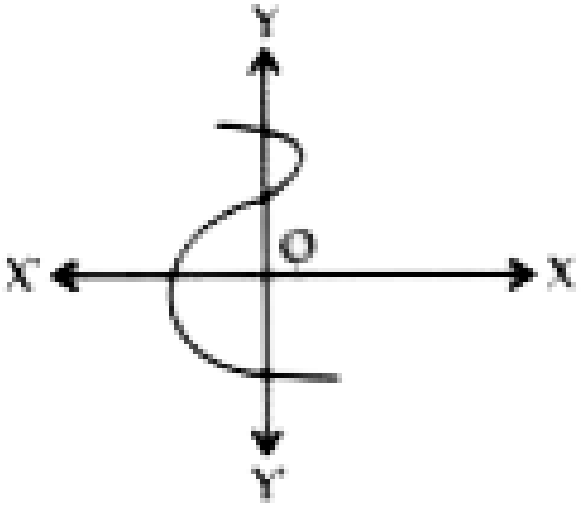
2. In the given figure ,the graph of a polynomial p(x) is shown .Find the number of zeroes of p(x).



A. 0

B. 1

C. 2

D. 3

Answer: B

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3. If one root of $5x^2 + 13x + k = 0$ be the reciprocal of the other root then the value of k is

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Self Assessment Objective Type Questions Ii Short Answer Type Questions

1. Find a quadratic polynomial ,the sum and product of whose zeroes are 6 and 9 respectively . Hence find the zeroes.

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2. If α and β are the zeroes of a polynomial $x^2 - 4\sqrt{3}x + 3$,then find the value of $\alpha + \beta - \alpha\beta$.

A. $4\sqrt{3}-3$

B. $\sqrt{3}-3$

C. $-3-4\sqrt{3}$

D. $4\sqrt{3}$

Answer: A

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3. If α and β are the zeroes of the polynomial $f(x)=x^2-6x+k$, find the value of k, such that $\alpha^2+\beta^2=40$.

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Self Assessment Objective Type Questions Iii Short Answer Type Questions

1. Verify whether 2,3 and $\frac{1}{2}$ are the zeroes of the polynomial $p(x)=2x^3-11x^2+17x-6$.

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2. Find the zeroes of the quadratic polynomial $x^2 - 3x - 10$ and verify the relationship between the zeroes and coefficient.

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3. Find the value of k such that the equation $x^2 - (k+6)x + 2(2k-1) = 0$ has sum of the roots equal to half of their product :

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Self Assessment Objective Type Questions Iv Long Answer Type Questions

1. If $\alpha and \beta$ are the zeros of the polynomial $f(x) = 2x^2 + 5x + k$ satisfying the relation $\alpha^2 + \beta^2 + \alpha\beta = \frac{21}{4}$, then find the value of k for

this to be possible.

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2. If α and β are the zeroes of the polynomial $x^2 + 4x + 3 = 0$,find the polynomial whose zeroes are $1 + \frac{\beta}{\alpha}$ and $1 + \frac{\alpha}{\beta}$

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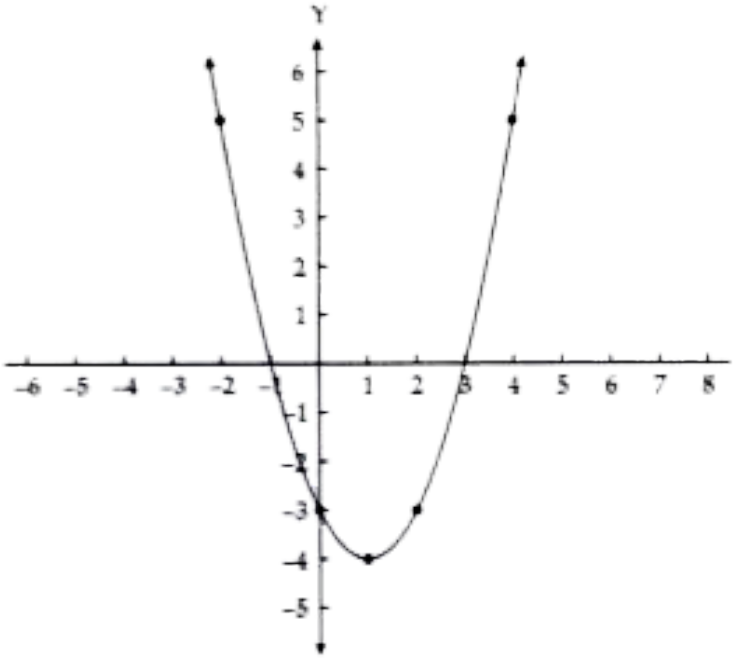
Self Assessment Objective Type Questions V Cose Study Bosed Questions

1. Due to heavy storm an electric wire got bent as shown in the figure .It followed a mathematical shape .Answer the following questions below :



Name the shape in which the wire is bent .

A. Spiral

B. ellipse

C. linear

D. Parabola

Answer: D

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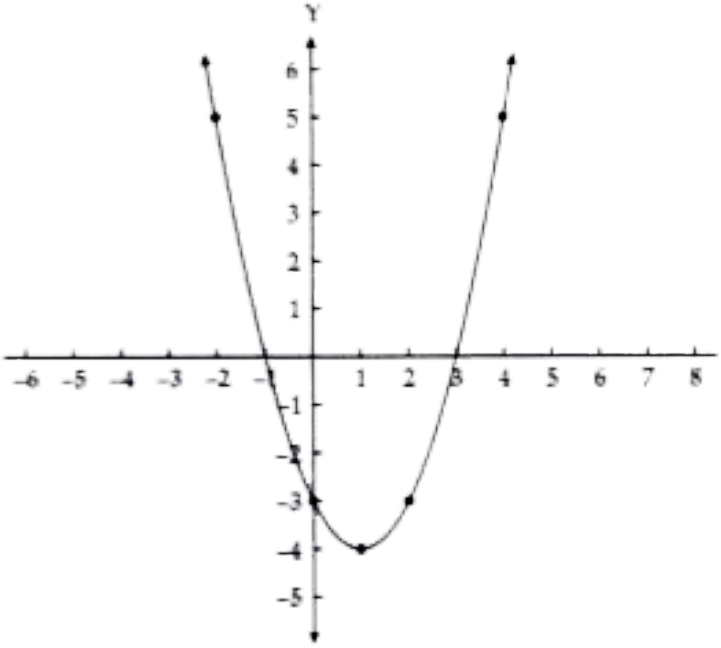
2. Due to heavy storm an electric wire got bent as shown in the figure .It followed a mathematical shape .Answer the following questions below :



How many zeroes are there for the polynomial (shape of the wire)

A. 2

B. 3

C. 1

D. 0

Answer:

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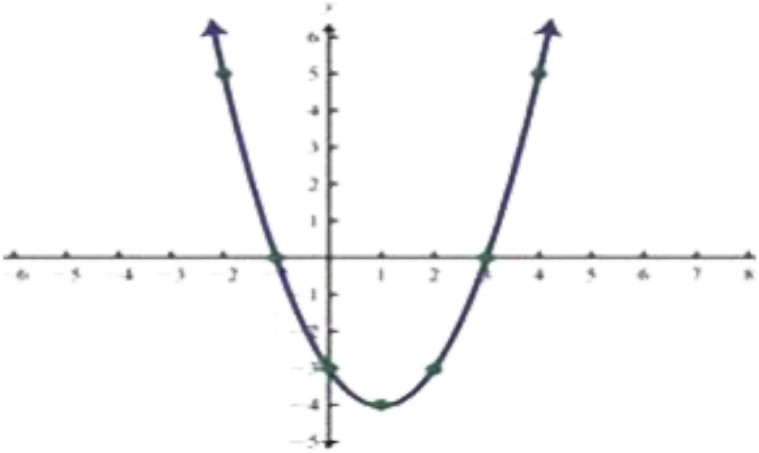
3. Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below



The zeroes of the polynomial are

A. $-1, 5$

B. $-1, 3$

C. $3, 5$

D. $-4, 2$

Answer:

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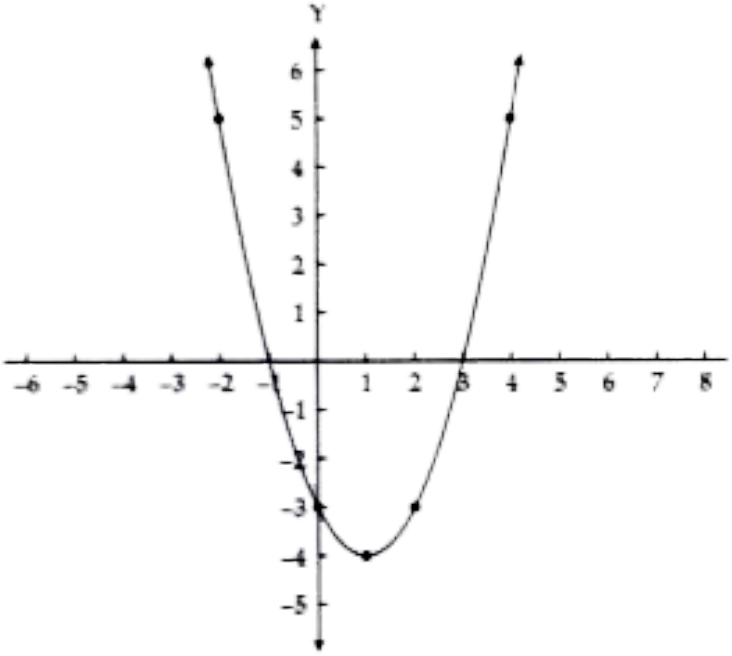
4. Due to heavy storm an electric wire got bent as shown in the figure .It followed a mathematical shape .Answer the following questions below :



What will be the expression of the polynomial ?

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

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

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

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

Answer:

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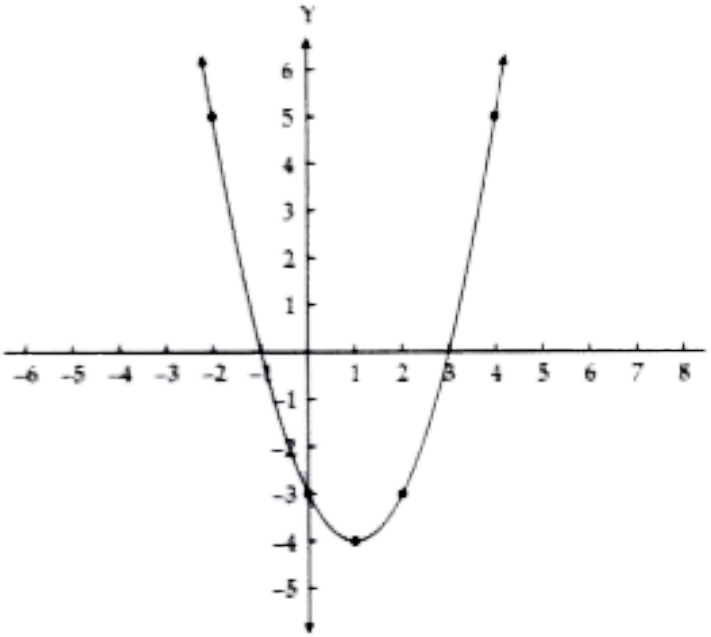
5. Due to heavy storm an electric wire got bent as shown in the figure .It followed a mathematical shape .Answer the following questions below :



What is the value of the polynomial if x=-1 ?

A. 6

B. -18

C. 18

D. 0

Answer:

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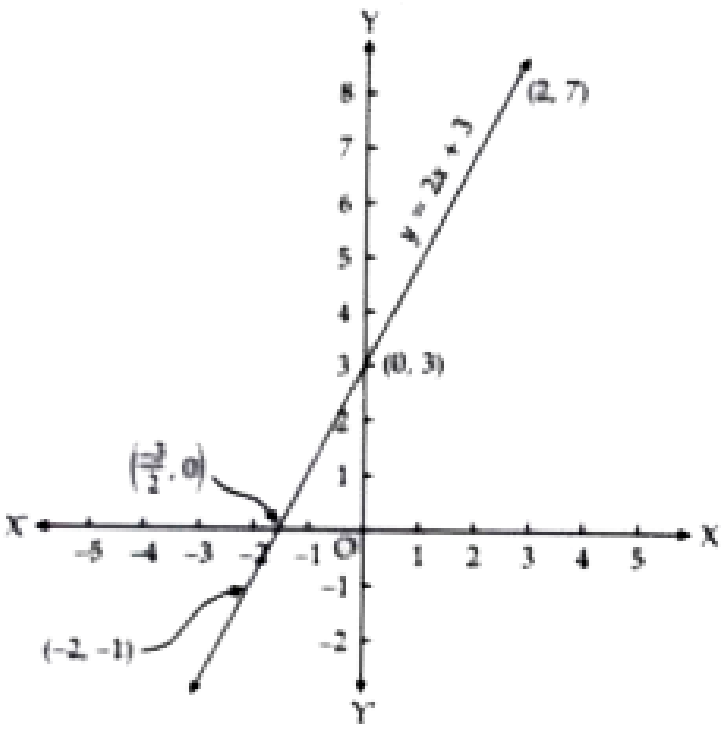
6. Answer the following questions below :



Name the shape of the graph.

A. Linear polynomial

B. Quadratic polynomial

C. Cubic polynomial

D. Parabola

Answer:

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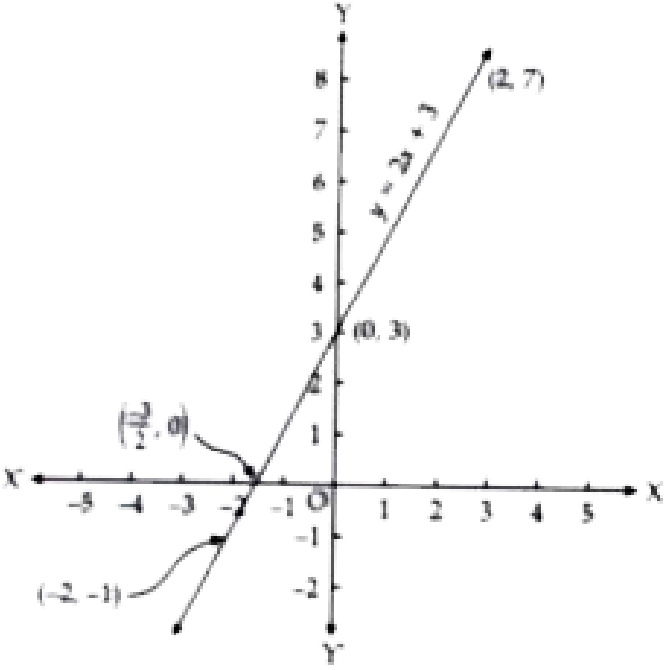
7. Answer the following questions below :



What is the value of the polynomial if x=-3 ?

A. 3

B. 9

C. 0

D. -3

Answer:

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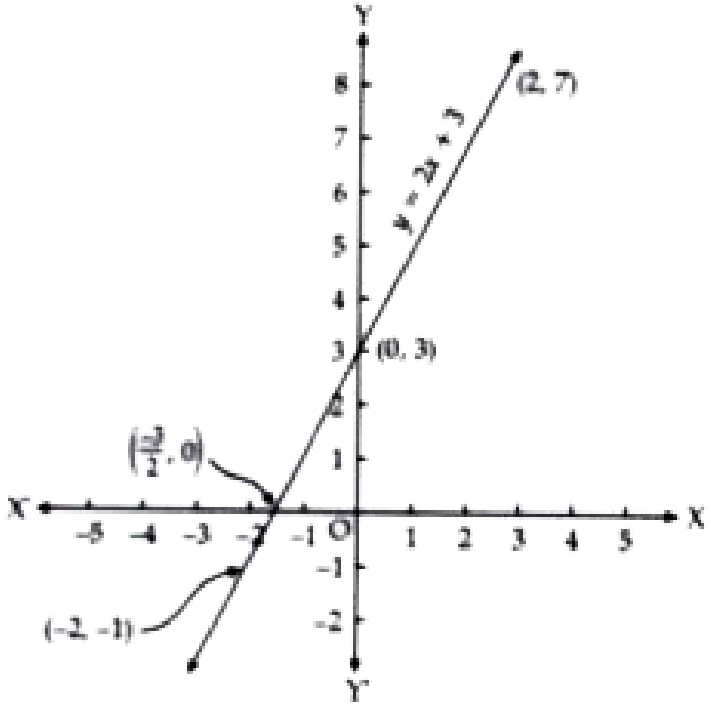
8. Answer the following questions below :



How many zeroes are Here for the polynomial ?

A. 0

B. 2

C. 1

D. -3

Answer:

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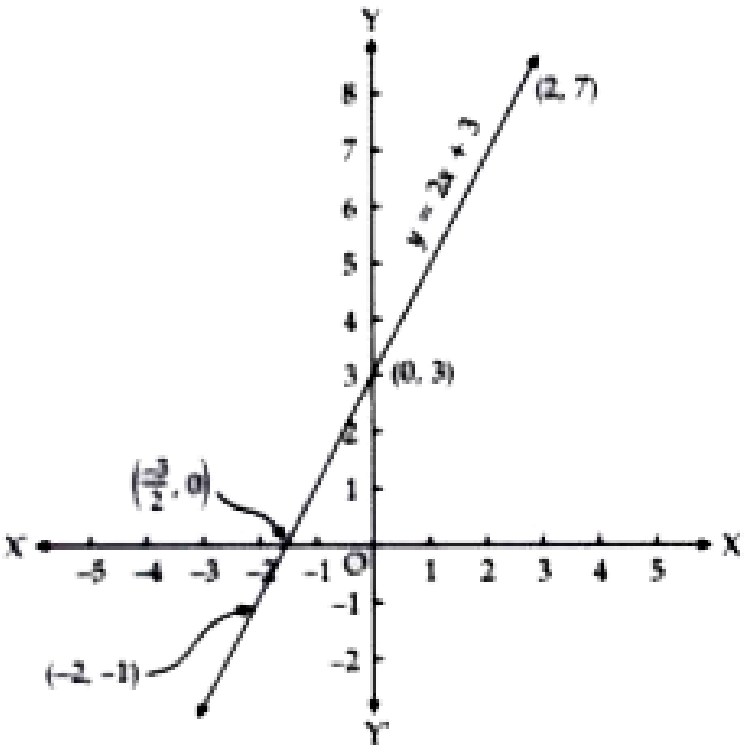
9. Answer the following questions below :



How many zeroes are there for the polynomial ?

A. 2

B. 3

C. 1

D. 4

Answer:

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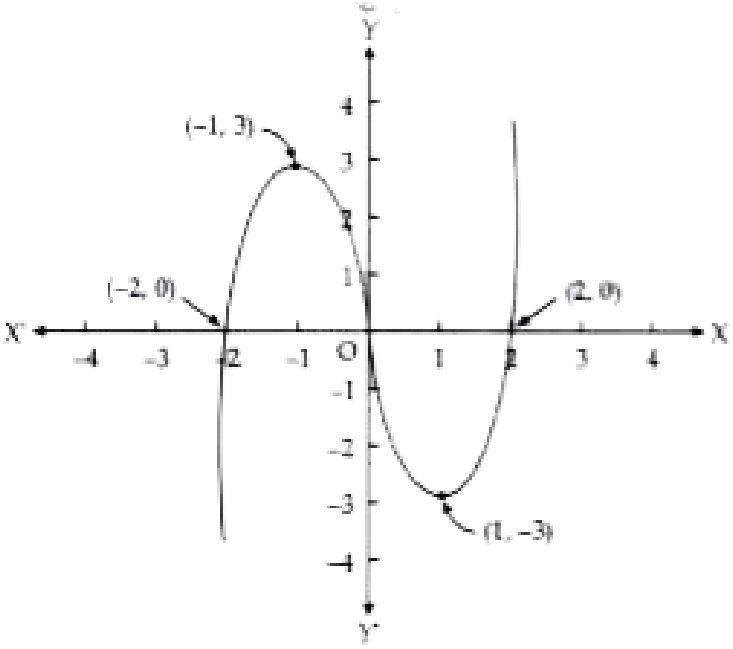
10. Answer the following questions below :



How many zeroes are there for the polynomial ?

A. 4

B. 2

C. 1

D. 3

Answer: D

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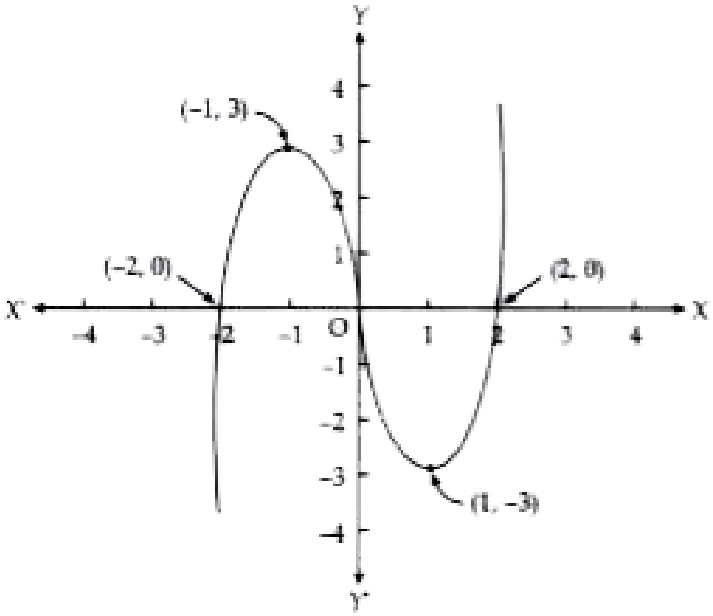
11. Answer the following questions below :



The zeroes of the polynomial are :

A. $-2, 0, 2$

B. $-1, 0, 1$

C. $-2, -1, 1$

D. $-2, -1, 2$

Answer:

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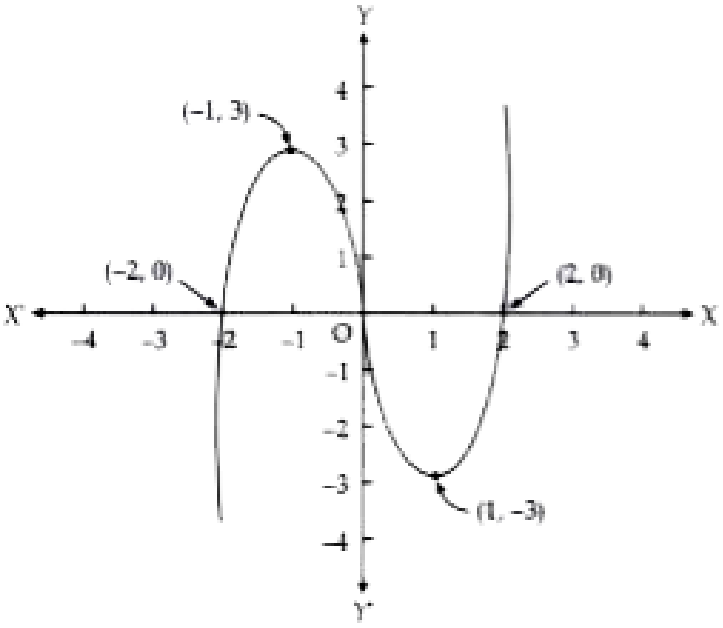
12. Answer the following questions below :



What will be the expression of the polynomial ?

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

B. $x^3 + 4x$

C. $x^3 - 4x$

D. $x^2 - 4x$

Answer:

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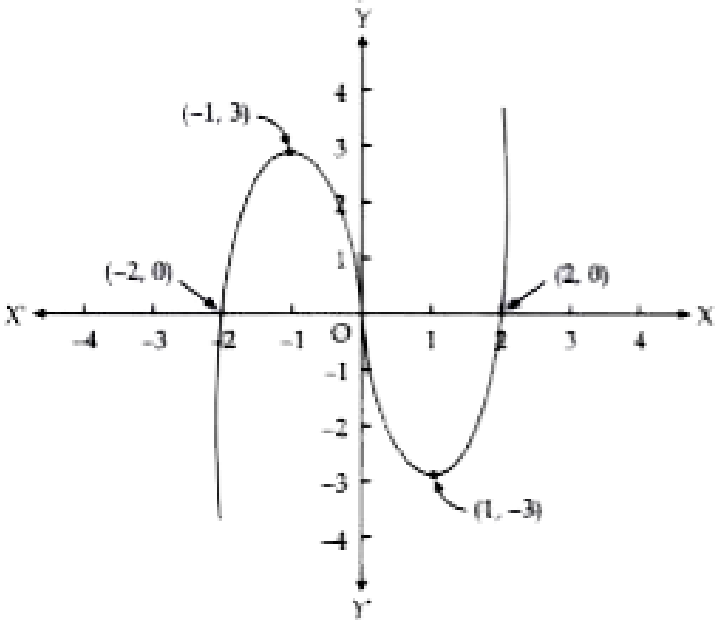
13. Answer the following questions below :



What is the value of the polynomial if x=-3?

A. 39

B. -15

C. 0

D. 15

Answer:

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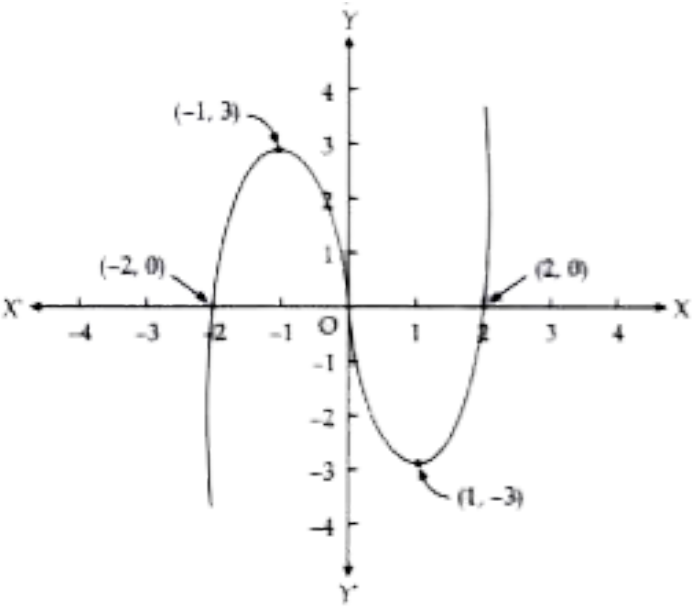
14. Answer the following questions below :



A polynomial of degree ..... is called a cubic polynomial .

A. 3

B. 2

C. 1

D. 4

Answer:

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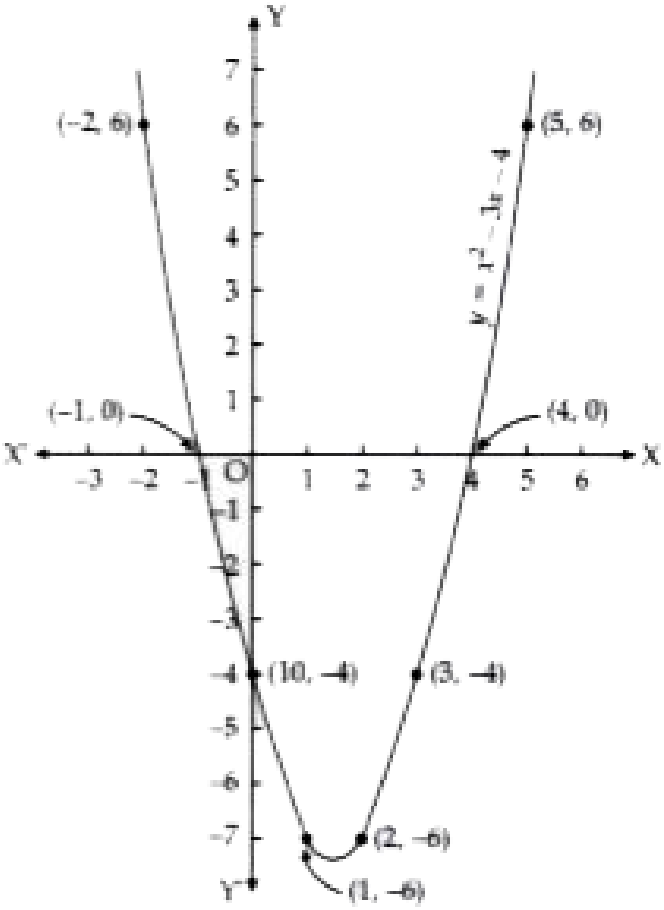
15. Answer the following questions below :



Name the

shape of the graph .

A. Ellipse

B. Parabola

C. linear

D. Spiral

Answer:

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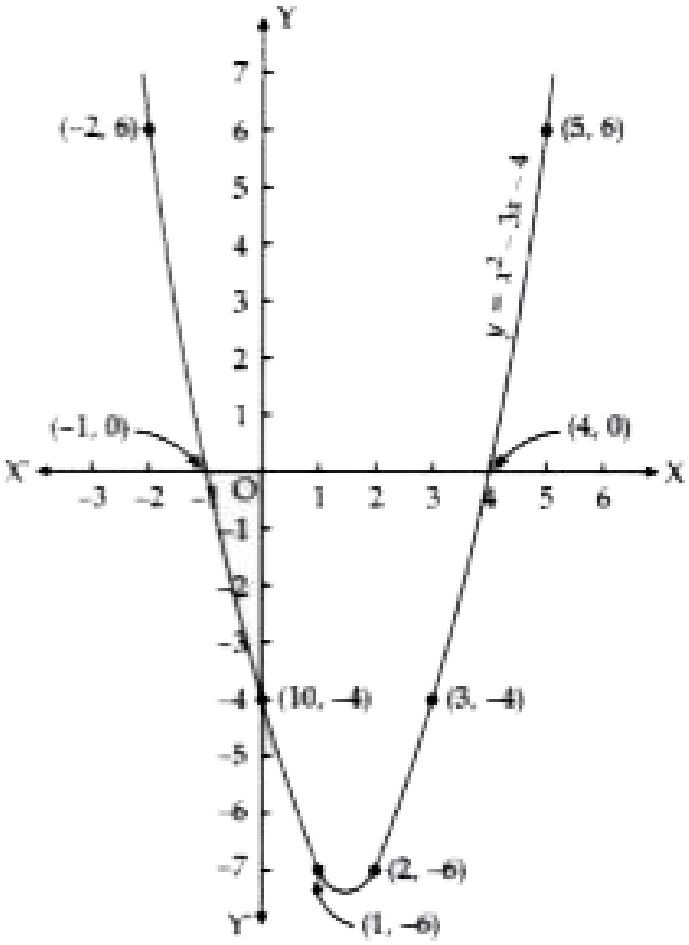
16. Answer the following questions below :



How many zeroes are there for the polynomial (shape of the wire)?

A. 3

B. 1

C. 2

D. 0

Answer:

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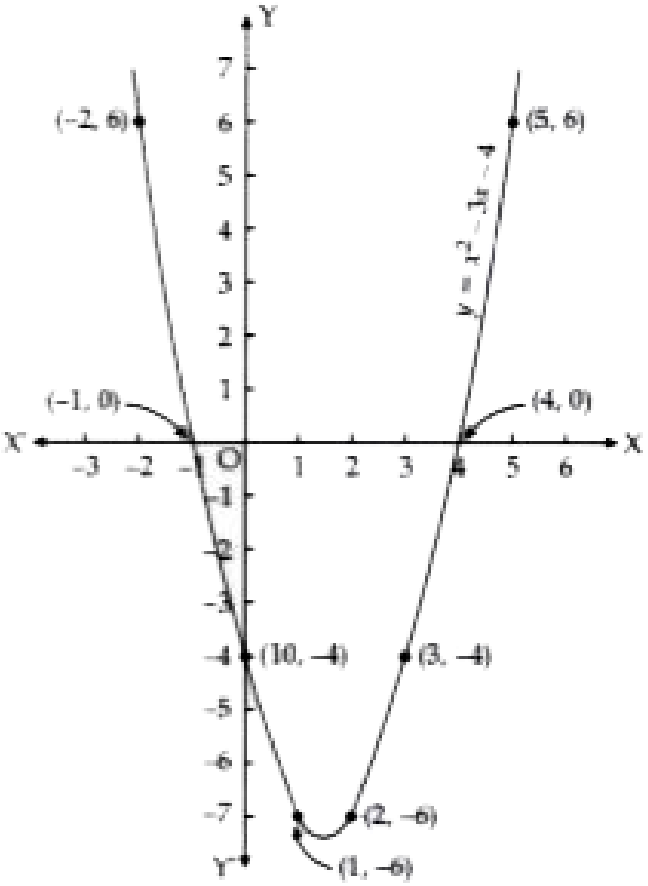
17. Answer the following questions below :



What is the value of the polynomial if x=-1?

A. 1

B. 2

C. 0

D. 3

Answer:

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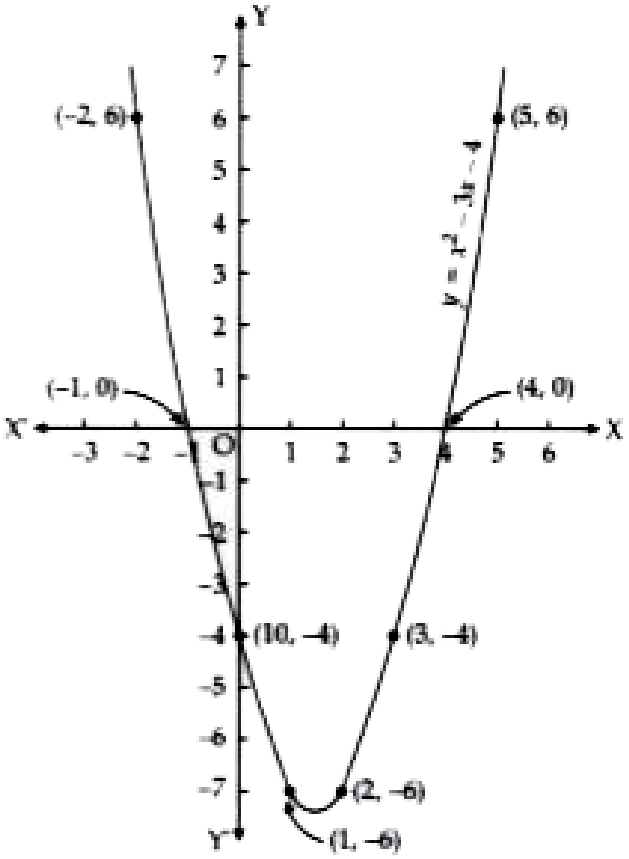
18. Answer the following questions below :



What is the value of the polynomial if x=-3 ?

A. 12

B. 13

C. 11

D. 14

Answer:

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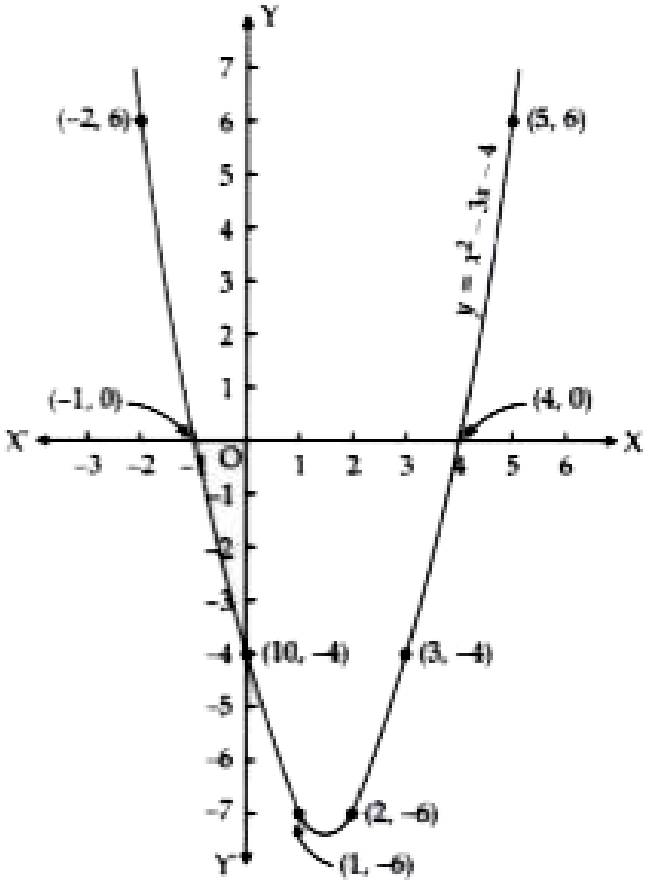
19. Answer the following questions below :



The highest power of the variable is a polynomial is called the .....of the polynomial .

A. degree

B. zero

C. value

D. graph.

Answer: A

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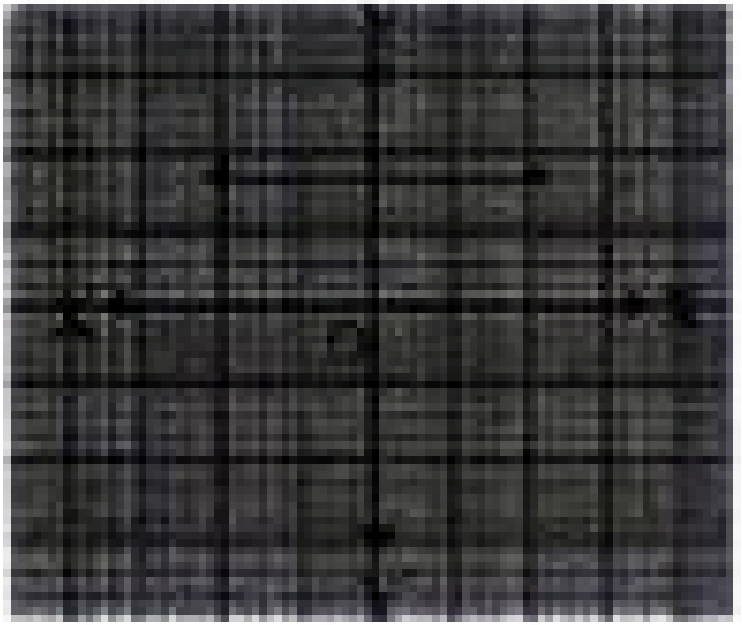
Ncert Corner Exercise 2 1

1. The graphs of y =p(x) are given in figure below , for some polynomials p(x).Find the number of zeroes of p(x) ,in each case.



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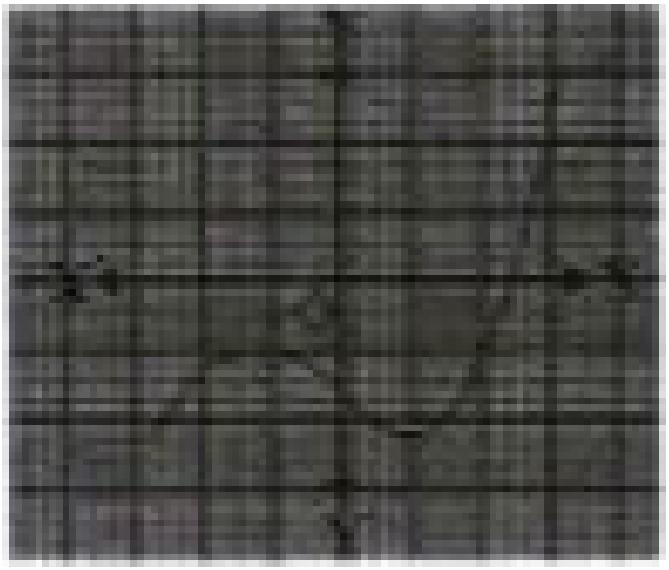
2. The graphs of y =p(x) are given in figure below , for some polynomials p(x).Find the number of zeroes of p(x) ,in each case.



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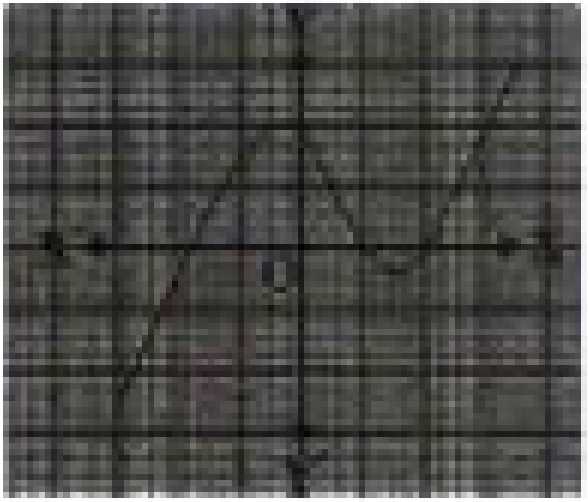
3. The graphs of y =p(x) are given in figure below , for some polynomials p(x).Find the number of zeroes of p(x) ,in each case.



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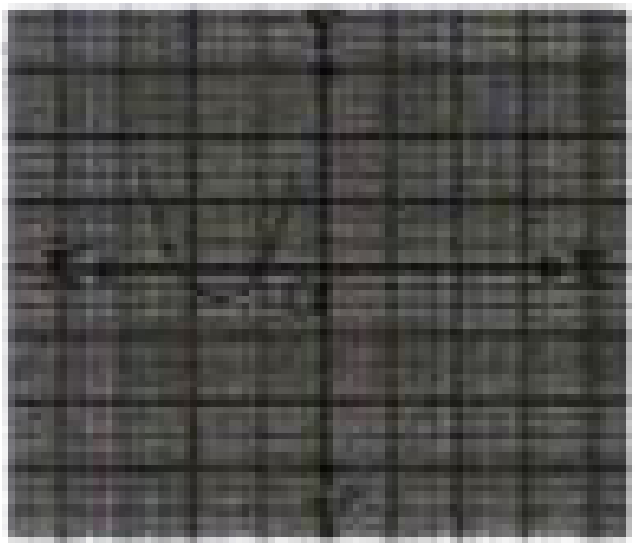
4. The graphs of y =p(x) are given in figure below , for some polynomials p(x).Find the number of zeroes of p(x) ,in each case.



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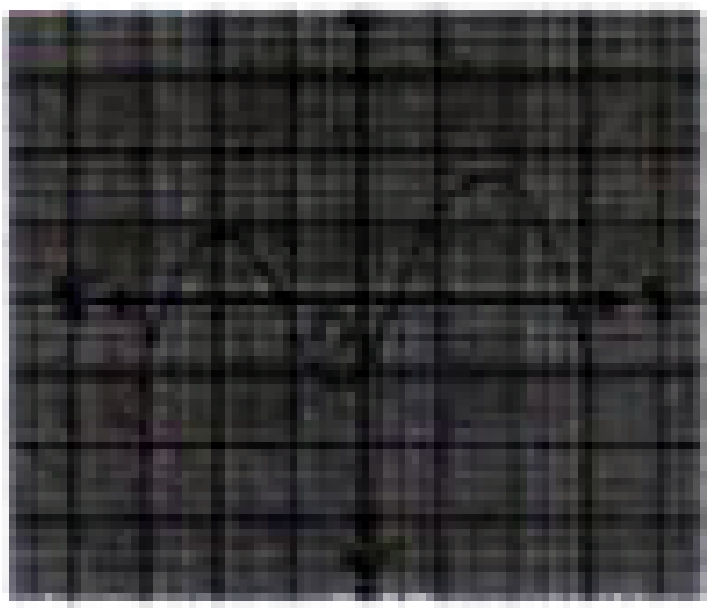
5. The graphs of y =p(x) are given in figure below , for some polynomials p(x).Find the number of zeroes of p(x) ,in each case.



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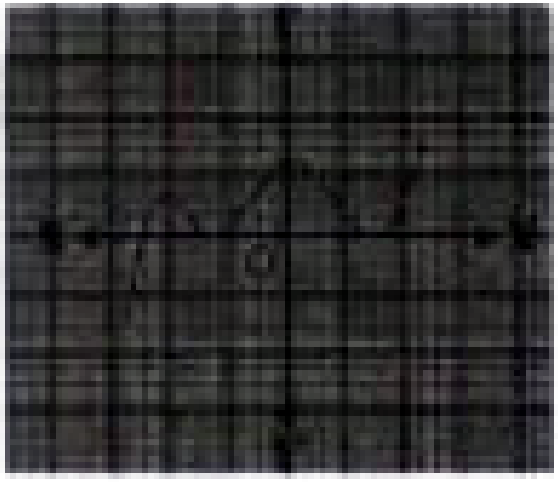
6. The graphs of y =p(x) are given in figure below , for some polynomials p(x).Find the number of zeroes of p(x) ,in each case.



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Ncert Corner Exercise 2 2

1. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

$x^2 - 2x - 8$

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2. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

$4s^2 - 4s + 1$

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3. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

$6x^2 - 3 - 7x$

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4. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

$4u^2 + 8u$

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5. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

$t^2 - 15$

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6. Find the zeroes of the following quadratic polynomials and verify the relationship between the zeroes and the coefficients.

$3x^2 - x - 4$

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7. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.

$\frac{1}{4}, -1$

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8. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.

$\sqrt{2}, \frac{1}{3}$

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9. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.

$0, \sqrt{5}$

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10. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.

1,1

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11. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.

$-\frac{1}{4}, \frac{1}{4}$

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12. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively.

4,1

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Ncert Corner Exercise 2 3

1. Divide the polynomial p(x) by the polynomial g(x) and find the quotient and remainder in each of the following :

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

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2. Divide the polynomial p(x) by the polynomial g(x) and find the quotient and remainder in each of the following : $p(x) = x^4 - 3x^2 + 4x + 5, g(x) = x^2 + 1 - x$

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3. Divide the polynomial p(x) by the polynomial g(x) and find the quotient and remainder in each of the following :$p(x) = x^4 - 5x + 6$, $g(x) = 2 - x^2$

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4. Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial : $t^2 - 3, 2t^4 + 3t^3 - 2t^2 - 9t - 12$

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5. Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial : $x^2 + 3x + 1, 3x^4 + 5x^3 - 7x^2 + 2x + 2$

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6. Check whether the first polynomial is a factor of the second polynomial by dividing the second polynomial by the first polynomial : $x^3 - 3x + 1, x^5 - 4x^3 + x^2 + 3x + 1$

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7. Obtain all other zeroes of $3x^4 + 6x^3 - 2x^2 - 10x - 5$, if two of its zeroes are $\sqrt{\frac{5}{3}}$ and $-\sqrt{\frac{5}{3}}$.

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8. On dividing $\left(x^3 - 3x^2 + x + 2\right)$ by a polynomial g(x), the quotient and remainder are $(x - 2)$ and $(-2x + 4)$ respectively. Find g(x).

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9. The polynomial $p(x)$ is such that for any polynomial $q(x)$ we have $p(q(x)) = q(p(x))$ then $p(x)$ is

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10. Give examples of polynomials p(x), g(x), g(x) and r(x), which satisfy the division algorithm and (i) $(ii)(iii)deg\ \ p((iv)x(v))\ \ = \ \ deg\ \ q((vi)x(vii))(viii)$ (ix) (ii) `(x) (xi) d eg"\ "q((x i i) x (xiii))"\ "="

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11. Give examples of polynomials p(x), g(x), g(x) and r(x), which satisfy the division algorithm and (i) $(ii)(iii)deg\ \ p((iv)x(v))\ \ = \ \ deg\ \ q((vi)x(vii))(viii)$ (ix) (ii) `(x) (xi) d eg"\ "q((x i i) x (xiii))"\ "="

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Ncert Corner Exercise 2 4

1. Verify that the numbers given alongside of the cubic polynomials below are their zeroes. Also verify the relationship between the zeroes and the coefficients in each case:(i) $2x^3 + x^2 - 5x + 2; \frac{1}{2}, 1, \ -2$ (ii) $x^3 - 4x^2 + 5x - 2;$ `2,\ 1,\

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2. Verify that the numbers given alongside of the cubic polynomials below are their zeroes. Also verify the relationship between the zeroes and the

coefficients in each case:(i) $2x^3 + x^2 - 5x + 2; \frac{1}{2}, 1, -2$ (ii) $x^3 - 4x^2 + 5x - 2;$ `2,\ 1,\

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3. Find a cubic polynomial with the sum ,sum of the product of its zeroes taken two at a time ,and the product of its zeroes as 2,-7,-14 respectively.

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4. If the zeroes of the polynomial $x^3 - 3x^2 + x + 1$ are $a\ \ b, \ a, \ a\ + \ b$, find a and b.

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5. If two zeros of the polynomial $f(x) = x^4 - 6x^3 - 26x^2 + 138x - 35$ are $2 \pm \sqrt{3}$, find other zeros.

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6. If the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial $x^2 - 2x + k$, the remainder copies out to be $x\ \ +\ a$. find k and a.

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Ncert Exemplar Exercise 2 1

1. If one of the zeroes of the quadratic polynomial $(k-1)x^2 + kx + 1$ is -3 ,then the value of k is

A. $\frac{4}{3}$

B. $-\frac{4}{3}$

C. $\frac{2}{3}$

D. $-\frac{2}{3}$

Answer: A

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2. A quadratic polynomial ,whose zeroes are $-3 \text{ and } 4$, is

A. $x^2 - x + 12$

B. $x^2 + x + 12$

C. $\frac{x^2}{2} - \frac{x}{2} - 6$

D. $2x^2 + 2x - 24$

Answer: C

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3. If the zeroes of the quadratic polynomial $x^2 + (a+1)x + b$ are 2 and -3 ,then

A. $x^2 + (a+1)x + b$ are 2 and -3 ,then

B. $a = 5, b = -1$

C. $a = 2, b = -6$

D. $a = 0, b = -6$

Answer: D

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4. The number of polynomials having zeroes as-2 and 5 is

A. 1

B. 2

C. 3

D. more than 3

Answer: D

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5. Given that one of the zereos of the cubic polynomial $ax^3 + bx^2 + cx + d$ is zero ,the product of the other two zeroes is

A. $-\frac{c}{a}$

B. $\frac{c}{a}$

C. 0

D. $-\frac{b}{a}$

Answer: B

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6. If one of the zereos of the cubic polynomial $x^3 + ax^2 + bx + c$ is -1, then the product of the other two zeroes is

A. $b - a + 1$

B. $b - a - 1$

C. $a - b + 1$

D. $a - b - 1$

Answer: A

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7. The zeroes of the quadratic polynomial $x^2 + 99x + 127$ are

A. both positive

B. both negative

C. one positive and one negative

D. both equal

Answer: B

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8. The zeroes of the quadratic polynomial $x^2 + kx + k$ where $k \neq 0$,

A. cannot both be positive

B. cannot both be negative

C. are always unequal

D. are always equal

Answer: A

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9. If the zeroes of the quadratic polynomial $ax^2 + bx + c, c \neq 0$ are equal,then

A. c and a have opposite signs

B. c and b have opposite signs

C. c and a have the same sign

D. c and b have the same sign

Answer: C

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10. If one of the zeroes of a quadratic polynomial of the form $x^2 + ax + b$ is the negative of the other,then it

A. has no linear term and the constant term is negative.

B. has no linear term and the constant term is positive.

C. can have a linear term but the constant term is negative.

D. can have a linear term but the constant term is positive.

Answer: A

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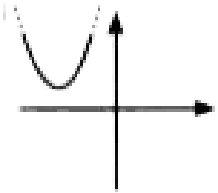
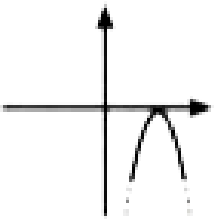
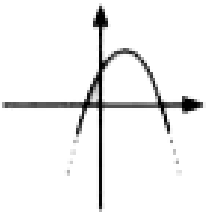
11. Which of the following is not the graph of a quadratic polynomial?

A. 

B. 

C. 

D. 

Answer: D

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Ncert Exemplar Exercise 2 2

1. Can $x^2 - 1$ be the quotient on division of $x^6 + 2x^3 + x - 1$ by a polynomial in x of degree 5?

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2. Answer the following and justify :

What will the quotient and remainder be on division of $ax^2 + bx + c$ by $px^3 + qx^2 + rx + s, p \neq 0$?

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3. If on division of a polynomial p(x) by a polynomial g(x), the quotient is zero, what is the relation between the degrees of p(x) and g(x)?

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4. If on division of a non-zero polynomial p(x) by a polynomial g(x), the remainder is zero, what is the relation between the degrees of p(x) and g(x)?

Watch Video Solution

5. Can a quadratic polynomial $x^2 + kx + k$ have equal zeros for some odd integer $k > 1$?

Watch Video Solution

6. Are the following statements True or False Justify your answers.

If the zeroes of a quadratic polynomial $ax^2 + bx + c$ are both positive ,then a ,b and c all have the same sign .

Watch Video Solution

7. Are the following statements True or False Justify your answers.

If the graph of a polynomial intersects the x- axis at only one point ,it cannot be a quadratic polynomial .

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8. Are the following statements True or False Justify your answers.

If the graph of a polynomial intersects the x- axis at exactly two points ,it need not be a quadratic polynomial .

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9. Are the following statements True or False Justify your answers.

If two of the zeroes of a cubic polynomial are zero then it does not have linear and constant terms.

Watch Video Solution

10. Are the following statements True or False Justify your answers.

If all the zeroes of a cubic polynomial are negative , then all the coefficients and the constant term of the polynomial have the same sign.

Watch Video Solution

11. Are the following statements True or False Justify your answers.

If all three zeroes of a cubic polynomial $x^3 + ax^2 - bx + c$ are positive ,then at least one of a ,b and c is non -negative .

Watch Video Solution

12. Are the following statements True or False Justify your answers.

The only value of k for which the quadratic polynomial $kx^2 + x + k$ has equal zeroes is $\frac{1}{2}$.

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Ncert Exemplar Exercise 2 3

1. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

(i) $4x^2 - 3x - 1$

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2. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

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

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3. Find the zeroes of the following polynomials factorisation method and verify the relations between the zeroes and the coefficients of the

polynomials.

$5t^2 + 12t + 7$

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4. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

(iv) $t6(3) - 2t^2 - 15t.$

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5. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

(v) $2x^2 + \frac{7}{2}x + \frac{3}{4}$

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6. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

(vi) $4x^2 + 5\sqrt{2}X - 3.$

Watch Video Solution

7. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

(vii) $2s^2 - \left(1 + 2\sqrt{2}\right)s + \sqrt{2}$

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8. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

(viii) $v^2 + 4\sqrt{3}v - 15$

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9. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

(ix) $y^2 + \frac{3}{2}\sqrt{5}y - 5$

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10. Find the zeroes of the following polynomials by factorisation method and verify the relations between the zeroes and the coefficients of the polynomials

(x) $7y^2 - \frac{11}{3}y - \frac{2}{3}$

Watch Video Solution

Ncert Exemplar Exercise 2 4

1. For each of the following find a quadratic polynomial whose sum and product respectively of the zeroes are as given .Also find the zeroes of these polynomials by factorisation.

$\frac{-8}{3}, \frac{4}{3}$

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2. For each of the following find a quadratic polynomial whose sum and product respectively of the zeroes are as given .Also find the zeroes of these polynomials by factorisation.

$\frac{21}{8}, \frac{5}{16}$

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3. For each of the following find a quadratic polynomial whose sum and product respectively of the zeroes are as given .Also find the zeroes of these polynomials by factorisation.

$-2\sqrt{3}, \ -9$

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4. For each of the following find a quadratic polynomial whose sum and product respectively of the zeroes are as given .Also find the zeroes of these polynomials by factorisation.

$\frac{-3}{2\sqrt{5}}, \frac{-1}{2}$

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5. Given that zeroes of cubic polynomial $x^3 - 6x^2 + 3x + 10$ are of the form a,a+b,a+2b for some real numbers a and b, find the values of a and b as well as zeroes of the given polynomial.

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6. Given that $\sqrt{2}$ is a zero of a polynomial $6x^3 + \sqrt{2}x^2 - 10x - 4\sqrt{2}$, find the other two zeroes.

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7. Find K, so that $x^2 + 2x + K$ is a factor of $2x^4 + x^3 - 14x^2 + 5x + 6$. Also find all the zeros of the two polynomials.

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8. Given that $x - \sqrt{5}$ is a factor of the cubic polynomial $x^3 - 3\sqrt{5}x^2 + 13x - 3\sqrt{5}$, find all the zeroes of the polynomial.

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9. For which values of a and b ,are the zeroes of $q(x) = x^3 + 2x^2 + a$ also the zeroes of the polynomial $p(x) = x^5 - x^4 - 4x^3 + 3x^2 + 3x + b$? Which zeroes of p(x) are not the zeroes of q(x) ?

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Board Corn Short Answer Type Questions

1. Find the value of k such that the equation $x^2 - (k+6)x + 2(2k-1) = 0$ has sum of the roots equal to half of their product :

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2. Find all zeroes of the polynomial $3x^3 + 10x^2 - 9x - 4$, if one of its zero is 1.

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3. For what value of k, in the polynomial $f(x) = 3x^4 - 9x^3 + x^2 + 15x + k$ completely divisible by $3x^2 - 5$.

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4. Find the zeroes of the quadratic polynomial $7y^2 - \frac{11}{3}y - \frac{2}{3}$ and verify the relation between the zeroes and the coefficients.

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5. Find all zeroes of the polynomial $2x^4 - 9x^3 + 5x^2 + 3x - 1$ if two of its zeroes are $2 + \sqrt{3}$ and $2 - \sqrt{3}$

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Stand Alone Mcqs

1. Q. If one zero of the quadratic polynomial $(k-1)x^2 + kx + 1$ is-3, then find the value of K

A. $\frac{4}{3}$

B. $-\frac{4}{3}$

C. $\frac{2}{3}$

D. $-\frac{2}{3}$

Answer: A

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2. A quadratic polynomial, whose zeroes are -3 and 4, is

A. $x^2 - x + 12$

B. $x^2 + x + 12$

C. $\frac{x^2}{2} - \frac{x}{2} - 6$

D. $2x^2 + 2x - 24$

Answer: C

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3. If the zeroes of the quadratic polynomial $x^2 + (a+1)x + b$ are 2 and -3, then

A. $a = -7, b = -1$

B. $a = 5, b = -1$

C. $a = 2, b = -6$

D. $a = 0, b = -6$

Answer: D

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4. If one of the zeroes of the cubic polynomial $ax^3 + bx^2 + cx + d$ is zero, the product of the other two zeroes is :

A. $-\frac{c}{a}$

B. $\frac{c}{a}$

C. 0

D. $-\frac{b}{a}$

Answer: B

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5. If one of the zeroes of the cubic polynomial $x^3 + ax^2 + bx + c$ is -1, then the perpendicular of the other two zeroes is

A. $b - a + 1$

B. $b - a - 1$

C. $a - b + 1$

D. $a - b - 1$

Answer: A

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6. The zeroes of the quadratic polynomial $x^2 + 99x + 127$ are

A. both positive

B. both negative

C. one positive and one negative

D. both equal

Answer: B

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7. The zeroes of the quadratic polynomial $x^2 + kx + k, k \neq 0$

A. cannot both be positive

B. cannot both be negative

C. are always unequal

D. are always equal

Answer: A

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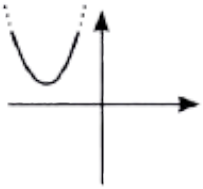
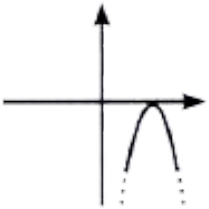
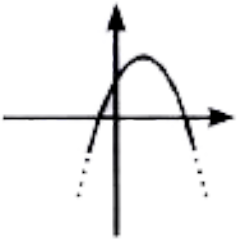
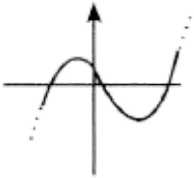
8. Which of the following is not the graph of a quadratic polynomial?

A. 

B. 

C. 

D. 

Answer: D

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9. What should be subtracted to the polynomial $x^2 - 16x + 30$, so that 15 is the zero of the resulting polynomial? (a) 30 (b) 14 (c) 15 (d) 16

A. 14

B. 15

C. 16

D. 30

Answer: B

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Assertion And Reason Based Mcqs

1. Assertion (A): Both zeroes of the quadratic polynomial $x^2 - 2kx + 2$ are equal in magnitude but opposite in sign then value of k is $\frac{1}{2}$.

Reason(R):Sum of zeroes of a quadratic polynomial $ax^2 + bx + c$ is $\frac{-b}{a}$

A. Both A and R are true and R is the correct explanation for a

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true

Answer: D

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2. Assertion(A): The sum and product of the zeroes of a quadratic polynomial are $\frac{-1}{4}$ and $\frac{1}{4}$ respectively.

Then the quadratic polynomial is $4x^2 + x + 1$

Reason (R):The quadratic polynomial whose sum and product of zeroes are given is x^2-(Sum of zeroes) x+ product of zeroes.

A. Both A and R are true and R is the correct explanation for a

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true

Answer: A

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3. Assertion (A) : The zeroes of the polynomial $p(x) = (x-1)(x-2)(x-3)$ are 1,2 and 3

Reason (R):The zeroes of a polynomial are the x-coordinates of the points where the graph of polynomial intersects or touches x-axis or the points on the graph where p(x)=0

A. Both A and R are true and R is the correct explanation for a

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true

Answer: A

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4. Assertion (A): The zeroes of the polynomial $p(x) = x^3 + 3x^2 - 4x - 12$ are -2,2 and 3.

Reason (R):Sum of zeroes $= \frac{-b}{a}$

and product of zeroes $= \frac{c}{a}$

A. Both A and R are true and R is the correct explanation for a

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true

Answer: B

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5. Assertion (A): $p(x) = 14x^3 - 2x^2 + 8x^4 + 7x - 3$ is a polynomial of degree 3.

Reason (R):The highest power of x in the polynomial p(x) is the degree of the polynomial.

A. Both A and R are true and R is the correct explanation for a

B. Both A and R are true and R is not correct explanation for A.

C. A is true but R is false.

D. A is false but R is true

Answer: D

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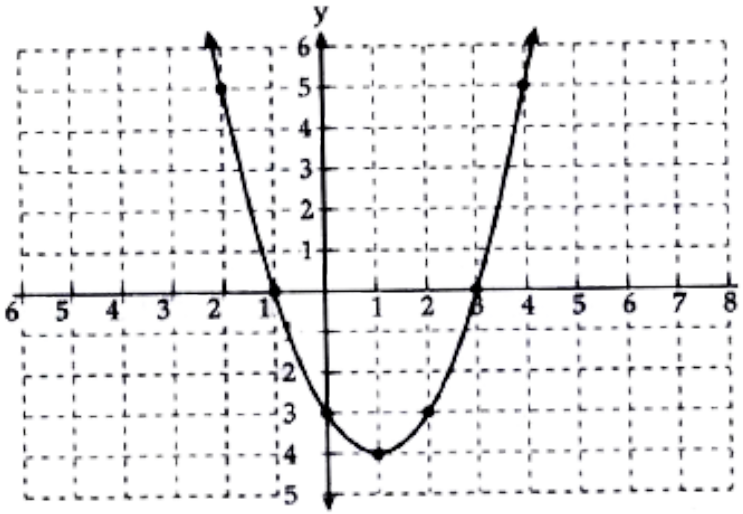
Case Based Mcqs

1. Read the following text and answer the following questions on the basis of the same:

Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below:



Name the shape in which the wire is bent

A. Spiral

B. ellipse

C. linear

D. parabola

Answer: D

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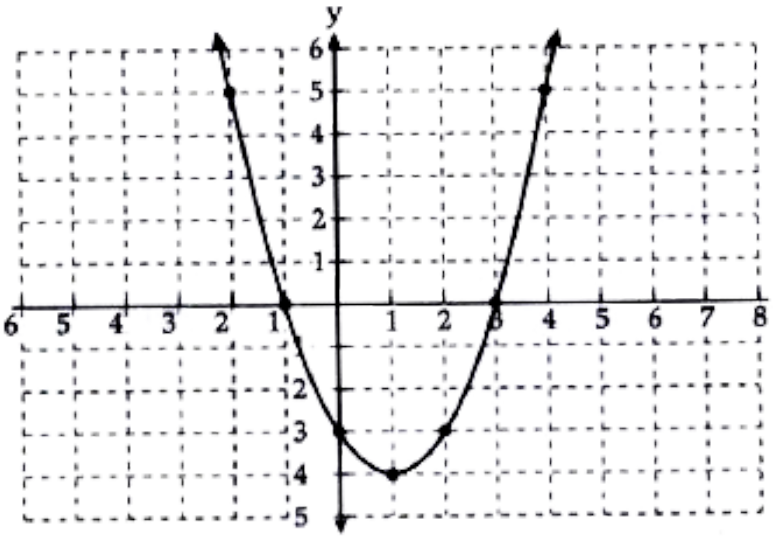
2. Read the following text and answer the following questions on the basis of the same:

Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below:



How many zeroes are there or the polynomial (shape of the wire)

A. 2

B. 3

C. 1

D. 0

Answer: A

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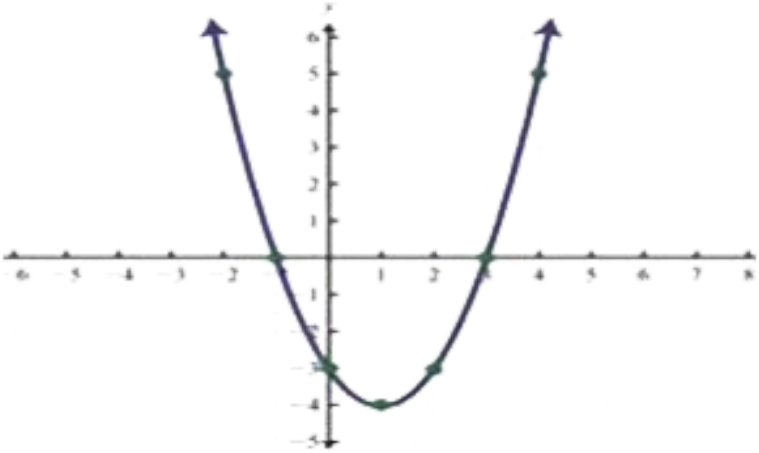
3. Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below



The zeroes of the polynomial are

A. $-1, 5$

B. $-1, 3$

C. $3, 5$

D. $-4, 2$

Answer: B

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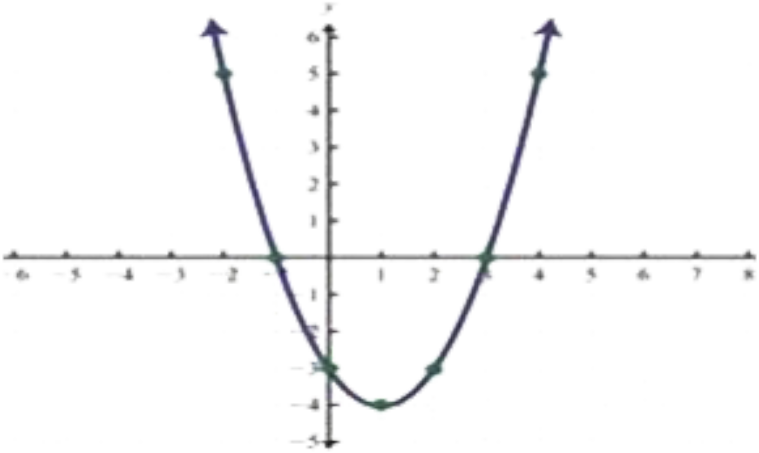
4. Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below



What will be the expression of the polynomial?

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

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

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

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

Answer: C

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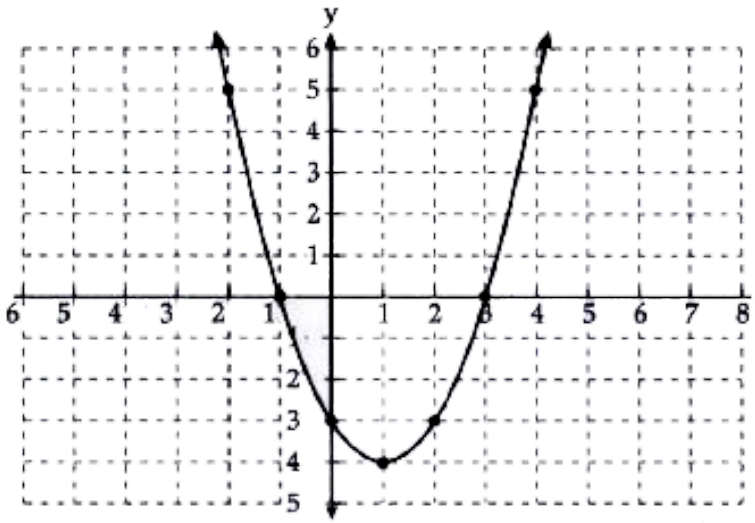
5. Read the following text and answer the following questions on the basis of the same:

Due to heavy storm an electric wire got bent as shown in the figure. It followed a mathematical shape. Answer the following questions below:



What is the value of the parabola if $x = -1$?

A. 6

B. -18

C. 18

D. 0

Answer: D

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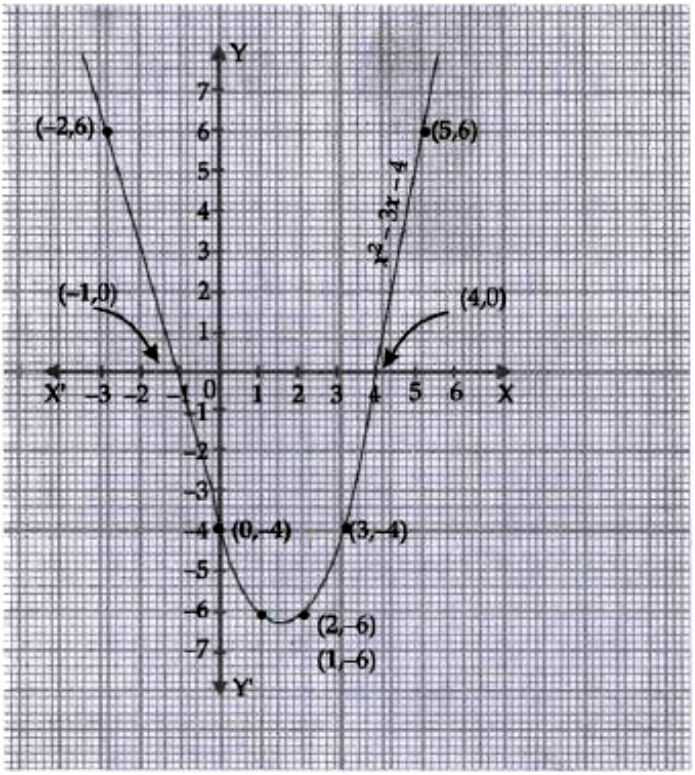
6. Read the following text and answer the following questions on the basis of the same:



Name the shape of the graph

A. Spiral

B. Straight line

C. parabola

D. ellipse

Answer: C

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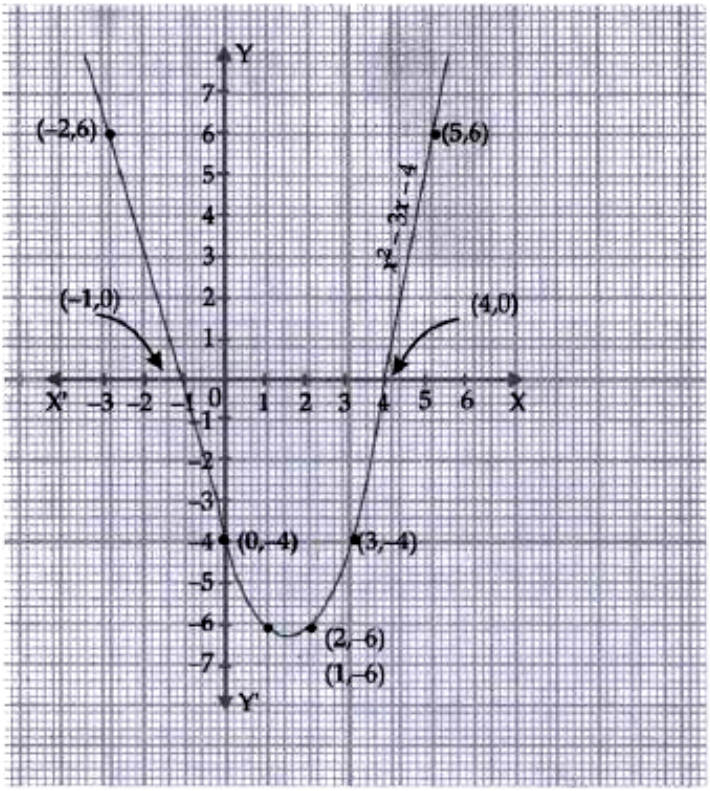
7. Read the following text and answer the following questions on the basis of the same:



How many zeroes are there for the polynomial?

A. 3

B. 1

C. 2

D. 0

Answer: C

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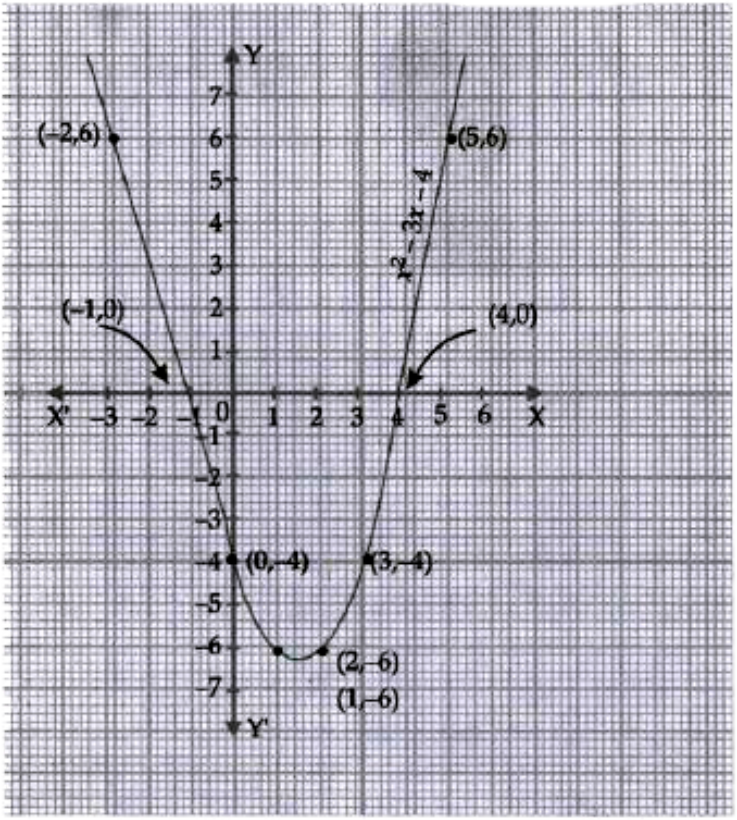
8. Read the following text and answer the following questions on the basis of the same:



What is the value of the polynomial if x=-1.

A. 1

B. 2

C. 0

D. 4

Answer: C

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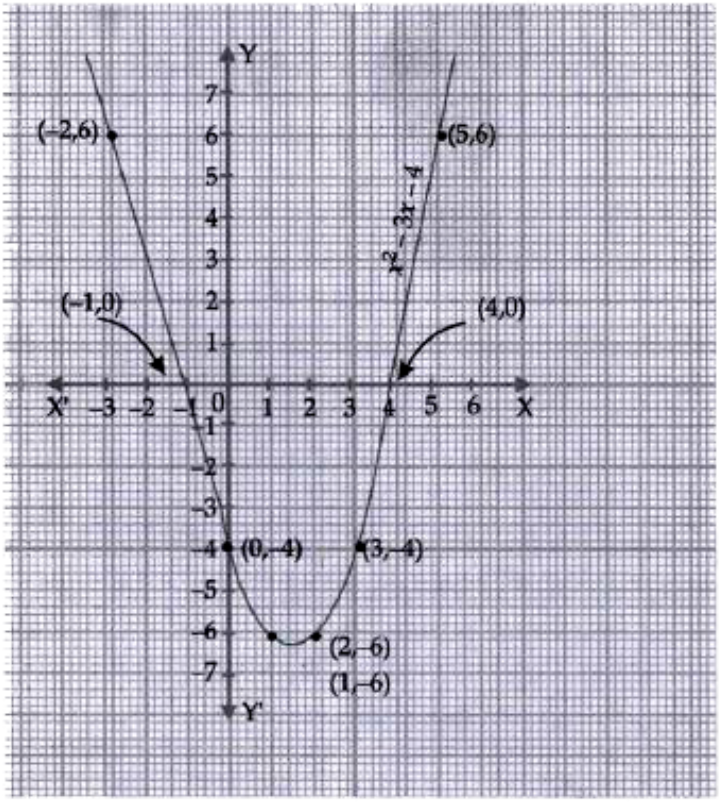
9. Read the following text and answer the following questions on the basis of the same:



The highest power of the variable in the polynomial is called.....of the polynomial.

A. degree

B. constant

C. coefficients

D. zero

Answer: A

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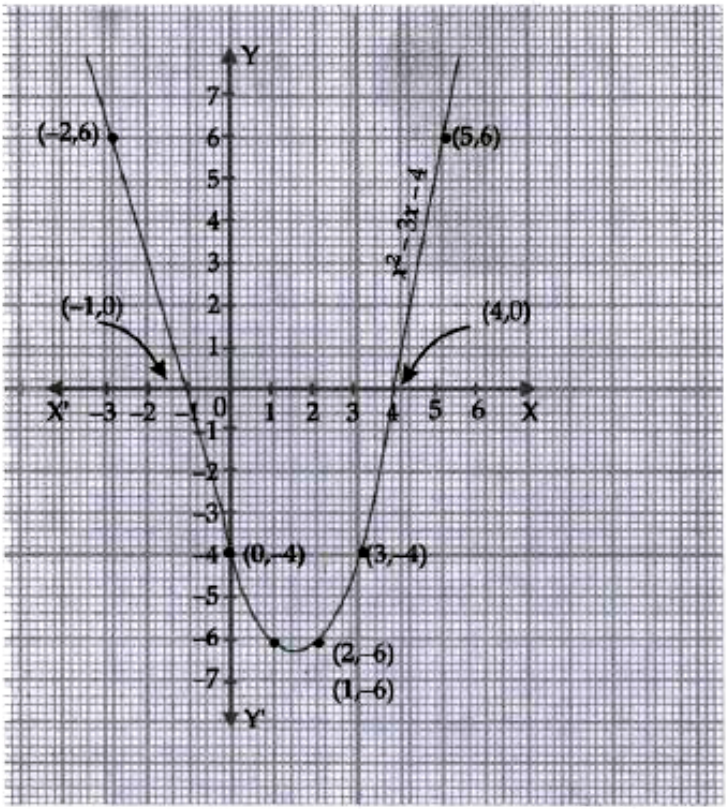
10. Read the following text and answer the following questions on the basis of the same:



What is the expression for the polynomial?

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

B. $x^2 - 3x - 4$

C. $x^2 + 3^2 + 4$

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

Answer: B

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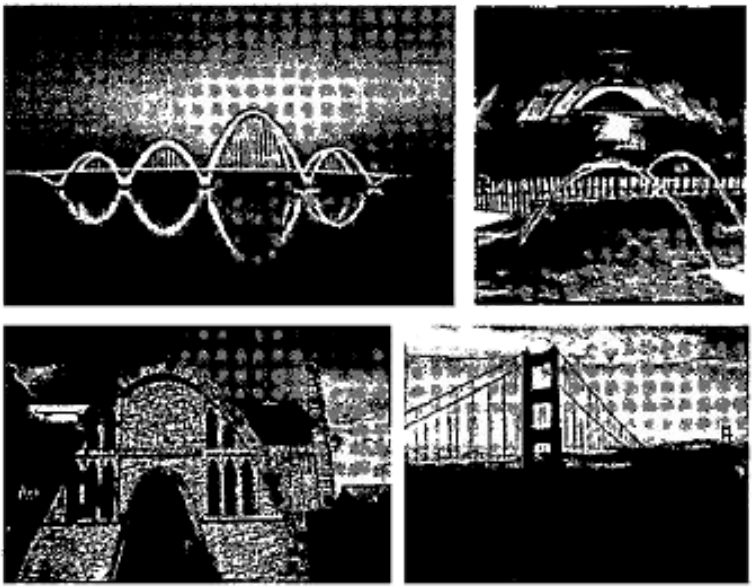
11. The below pictures are few natural examples of parabolic shape which is represented by a quadratic polynomial. A parabolic arc is an arc in the shape of a parabola. In structures, their curve represents an efficient method of load, and so can be found in bridges and the architechture in a variety of forms.

In the standard form of quadratic polynomial $ax^2 + bx + c$ where a,b and c are



A. all are real numbers

B. all are rational numbers

C. a is a non zero real numbers a and b and c are any real numbers.

D. all are integers.

Answer: C

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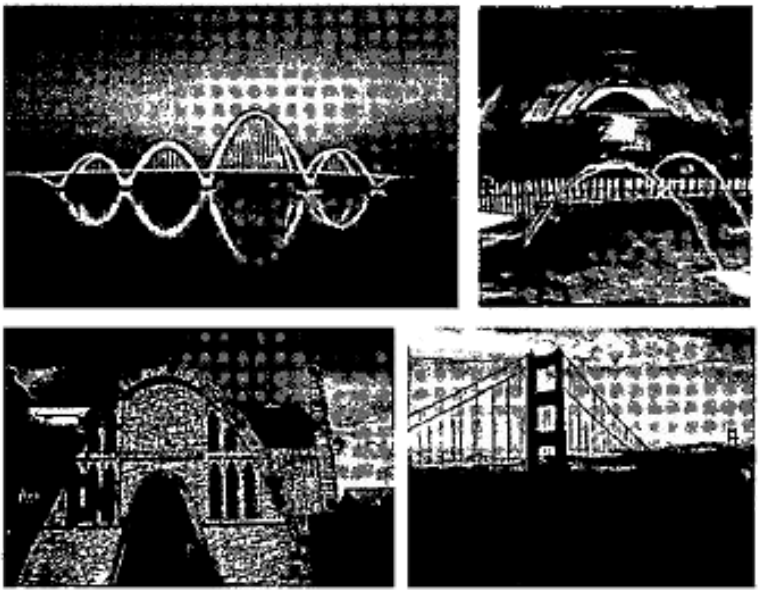
12. The below pictures are few natural examples of parabolic shape which is represented by a quadratic polynomial. A parabolic arc is an arc in the shape of a parabola. In structures, their curve represents an efficient method of load, and so can be found in bridges and the architechture in a variety of forms.

If the zeroes of the quadratic polynomial are equal, where the

discriminant $D = b^2 - 4ac$, then



A. $D > 0$

B. $D < 0$

C. $D \geq 0$

D. $D = 0$

Answer: D

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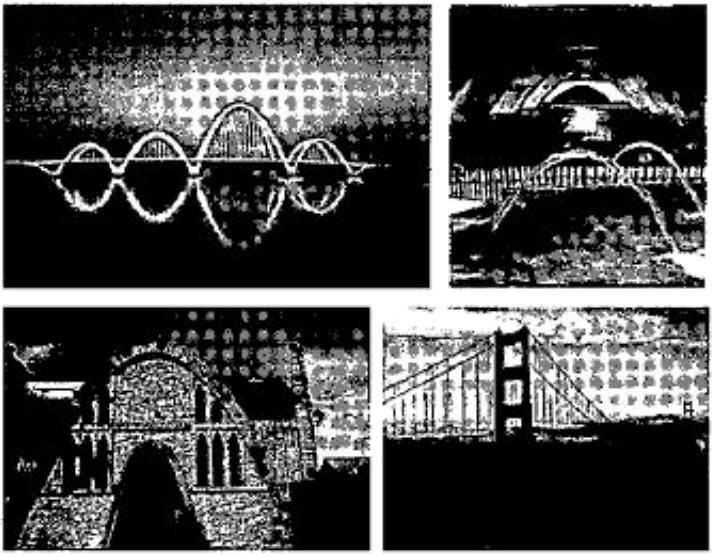
13. The below pictures are few natural examples of parabolic shape which is represented by a quadratic polynomial. A parabolic arc is an arc in the shape of a parabola. In structures, their curve represents an efficient method of load, and so can be found in bridges and the architecture in a variety of forms

If α and $\frac{1}{\alpha}$ are the zeroes of the quadratic polynomial $2x^2 - x + 8k$ then k is



A. 4

B. $\frac{-1}{4}$

C. $\frac{1}{4}$

D. 2

Answer: C

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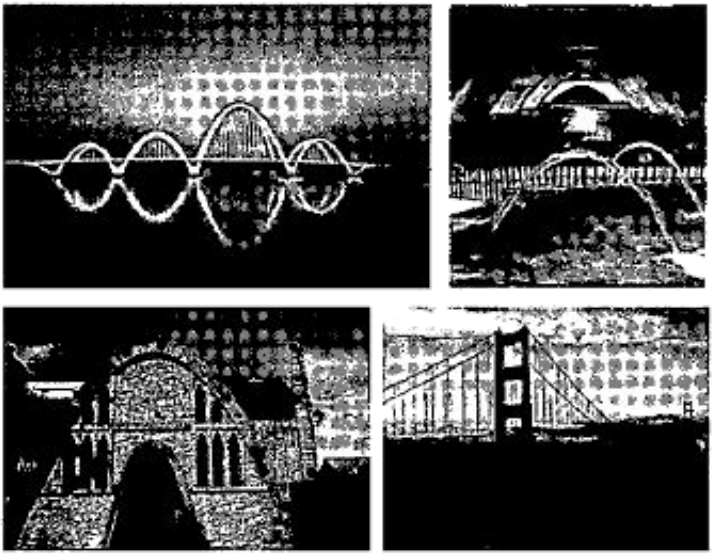
14. The below pictures are few natural examples of parabolic shape which is represented by a quadratic polynomial. A parabolic arc is an arc in the shape of a parabola. In structures, their curve represents an efficient method of load, and so can be found in bridges and the architecture in a variety of forms

The graph of $x^2 + 1$



A. Intersects x-axis at two distinct points.

B. Touches x-axis at a point.

C. neither touches nor intesecs

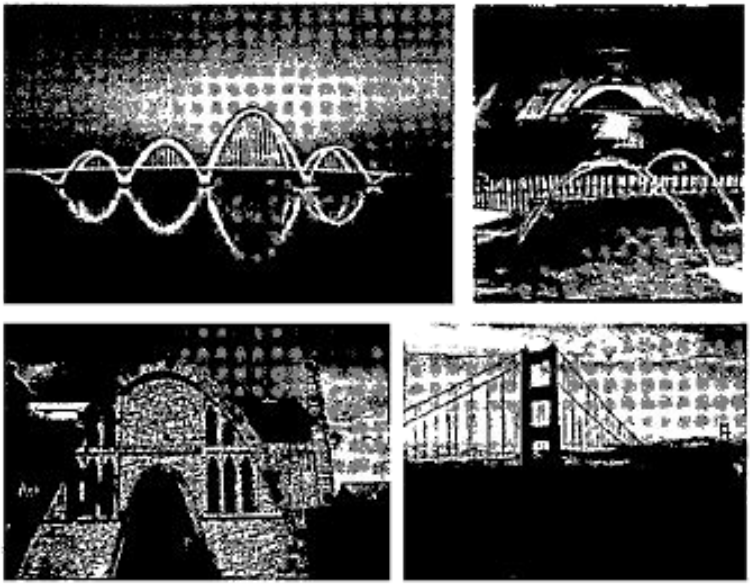
D. either touches or intersects x axis

Answer: C

Watch Video Solution

15. The below pictures are few natural examples of parabolic shape which is represented by a quadratic polynomial. A parabolic arc is an arc in the shape of a parabola. In structures, their curve represents an efficient method of load, and so can be found in bridges and the architecture in a variety of forms.

If the sum of the roots is $-p$ and the product of the roots is $\frac{-1}{p}$ then the quadratic polynomial is



A. $k\left(-px^2+\frac{x}{p}+1\right)$

B. $k\left(px^2-\frac{x}{p}-1\right)$

C. $k\left(x^2+px-\frac{1}{p}\right)$

D. $k\left(x^2-px+\frac{1}{p}\right)$

Answer: C

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Multiple Choice Questions

1. If $x=\frac{8\pm\sqrt{(-8)^2-4\times3\times2}}{2\times3}$, then the required polynomials is :

A. $3x^2-8x+2=0$

B. $3x^2+8x-2=0$

C. $2x^2-8x-2=0$

D. $3x^2+8x+2=0$

Answer: A

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2. Find the corfficient of x^0 in $x^2 + 3x + 2 = 0$.

A. 3

B. 2

C. -3

D. -1

Answer: C

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3. In which condition will the polynomial $ax^2 + bx + c = 0$ be a quadratic equation ?

A. $a \neq 0$

B. a=c

C. a=b

D. a=0

Answer: A

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4. For which value of p will the equation

$(p^2 - 1)x^2 + px + q = 0$

not be a quadratic equation ?

A. p=1

B. Both(a) and (b)

C. $p = -1$

D. p=0

Answer: C

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5. Write the zero of the polynomial

$f(x) = x^2 - x - 6$.

A. $-3, 2$

B. 3,2

C. $-3, \ -2$

D. $3, \ -2$

Answer: D

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6. For what value of k is -4 a zero of the polynomial $f(x) = x^2 - x - (2k + 2)$?

A. 6

B. 9

C. -6

D. -9

Answer: C

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7. If α and β are the zeroes of a polynomial such that $\alpha+\beta=-6$ and $\alpha\beta=-4$, then write the polynomial .

A. $x^2-6x-4=0$

B. $x^2+6x+4=0$

C. $x^2+6x-4=0$

D. $x^2-6x+4=0$

Answer: B

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8. If α and β are the zeroes of the polynomial $f(y) = 2y^2 + 7y + 5$, write the values of $\alpha + \beta + \alpha\beta$.

A. 1

B. -2

C. 0

D. -1

Answer: D

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9. If 1 is a roote of the equation $ay^2 + ay + 3 = 0$ and $y^2 + y + b = 0$, then ab equals :

A. 3

B. 6

C. $-\frac{7}{2}$

D. -3

Answer: A

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10. The roots of the equation $x^2 + x - p(p+1) = 0$ where p is a constant are :

A. p,$p+1$

B. p,$-(p+1)$

C. $-p, p+1$

D. $-p, \ -(p+1)$

Answer: C

View Text Solution

11. The zeroes of the polynomials $x^2 - 3x - m(m+3)$ are :

A. m,$m+3$

B. $-m, m+3$

C. $m, \ -(m+3)$

D. $-m, \ -(m+3)$

Answer: B

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12. If one of the zeroes of the quadratic polynomial $x^2 + 3x + k$ is 2 , then the value k is :

A. 10

B. -7

C. -10

D. -2

Answer: b

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13. The quadratic polynomial , the sum of whose zeroes is -5 and their product is 6,is :

A. $x^2 + 5x + 6$

B. $x^2 - 5x - 6$

C. $x^2 - 5x + 6$

D. $-x^2 + 5x + 6$

Answer: A

View Text Solution

14. If $\frac{1}{2}$ is a root of the equation $x^2 - kx - \frac{5}{4} = 0$, then the value of k is :

A. 2

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

C. -2

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

Answer: A

View Text Solution

15. The number of polynomial having zeroes as -2 and 5 is :

A. 1

B. 3

C. 2

D. more than 3

Answer: D

View Text Solution

16. Which of the following is a polynomial

A. $x^2 - 6\sqrt{x} + 2$

B. $\sqrt{x} + \frac{1}{\sqrt{x}}$

C. $\frac{5}{x^2} - 3x + 1$

D. None of these

Answer: D

View Text Solution

17. A quadratic polynomial whose zeoes are -3 and 4 , is :

A. $x^2 - x + 12$

B. $x^2 + x + 12$

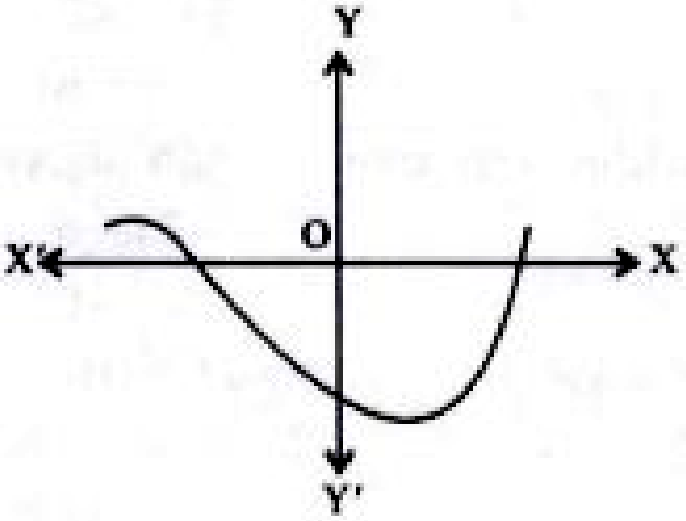
C. $x^2 - x - 12$

D. $2x^2 + 2x - 9$

Answer: C

View Text Solution

18. Number of zeroes of the polynomial f(x) shown in the figure , are :



A. 3

B. 1

C. 2

D. 0

Answer: B

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19. If α and β are the zeroes of the polynomial $5x^2 - 7x + 2$, then the sum of their reciprocals is ..... `

A. $\frac{7}{2}$

B. 0

C. $-\frac{7}{2}$

D. $-\frac{2}{7}$

Answer: A

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20. The graph of a polynomial of degree 3 intersects X - axis at most ..... points .

A. 4

B. 2

C. 3

D. None of these

Answer: B

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21. The sum and product of the zeroes of the quadratic polynomial $4x^2 - 27x + 3k^2$ are equal .then , the value of k is .....

A. $+3$

B. -3

C. ± 3

D. 0

Answer: B

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22. If the sum of roots of the polynomial $4x^2 - 2x + (k - 4)$ is half of their product , then the value of k is .....

A. 8

B. -8

C. 6

D. 5

Answer: B

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23. If one of the zeroes of the quadratic polynomial $(k-1)x^2+kx+1$ is -3, then the value of k is :

A. $\frac{4}{3}$

B. $\frac{2}{3}$

C. $\frac{-4}{3}$

D. $\frac{-2}{3}$

Answer: A

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24. A quadratic polynomial , whose zeroes are -3 and 4 , is :

A. x^2-x+12

B. $\frac{x^2}{2}-\frac{x}{2}-6$

C. x^2+x+12

D. $2x^2+2x-24$

Answer: C

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25. If the zeroes of the quadratic polynomial $x^2(a+1)x+b$ are 2 and -3 , then :

A. $a=-7, b=-1$

B. $a=2, b=-6$

C. $a=5, b=-1$

D. $a=0, b=-6$

Answer: C

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Very Short Answer Type Questions

1. Find a quadratic , the sum and product of whose zeroes are 0 and $-\sqrt{2}$ respectively .

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2. If $(x+a)$ is a factor of $f(x)=\left(2x^2+2ax+5x+10\right)$ find a ,

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3. For what value of k is 3 a zero of the polynomial $f(x)=2x^2+x+k$?

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4. For what value of k is -2 a zero of the polynomial $f(x)=3x^2+4x+2k$?

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5. If $x + k$ is the G.C.D of $x^2 - 2x - 15$ and $x^3 + 27$ then find the value of k .

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6. Show that $x = -3$ is a solution of $x^2 + 6x + 9 = 0$.

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7. If α, β are the zeroes of a polynomial such that $\alpha + \beta = 6$ and $\alpha\beta = 4$, then write down the polynomial .

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8. Sum of zeroes of the polynomial $2x^2 - 4x + 5$ is 4 . Navdeep at once said "it is false " Do you agree with Navdeep ? Justify

View Text Solution

9. Find the value of p so that the polynomial $px(x-3)+9=0$ has two equal roots .

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10. If the product of the zeroes of a polynomial $\left(ax^2-6x-4\right)$ is 4 , find the value of a .

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11. Write the polynomial , the product and sum of whose zeroes are $-\frac{9}{2}$ and $-\frac{3}{2}$.

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12. A group consists of 12 honest people and 8 dishonest people . Write a quadratic polynomial whose roots are equal to number of honest people

and number of dishonest people .

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13. Manish engages a labour to get some repair worrk . Charges to be paid forr this worrk are zeroes of the polynomial $x^2 - 300x + 22500$ .Find the zeroes of this polynomial .

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14. Given $f(x+1) = 3x + 5$, evaluate $f(-2)$ and $f(x)$

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15. If $f(x) = \dfrac{x}{x^2+1}$, then find :

$f\left(\dfrac{1}{x}\right)$

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16. If $f(x) = \dfrac{x}{x^2+1}$, then find :

$f(x-1)$

View Text Solution

17. Find the remainder when

$f(x) = \left(2x^3 - 3x^2 + 7x - 8\right)$

is divided by $g(x) = (x-1)$.

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18. Find the H.C.F of $f(x) = 3x^3 - 27x^2 + 60x$ and $g(x) = \ = x^2 - 16$.

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19. Find the factors of the following polynomial

$f(x) = 2x^3 + x^2 - 13x + 6$.

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20. If two zeroes of the polynomial $x^3 - 4x^2 - 3x + 12$ are $\sqrt{3}$ and $-\sqrt{3}$,then find the third zero .

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21. If $x = \frac{2}{3}$ and $x = -3$ are zeroes of the polynomial $ax^2 + 7x + b = 0$, find the value of a and b .

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Short Answer Type Questions

1. Find the zeroes of given polynomial ,

$4\sqrt{3x^2} + 5x - 2\sqrt{3} = 0$

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2. If α and β are zeroes of the quadratic polynomial $4x^2 + 4x + 1$, then find the quadratic polynomial whose zeroes are 2α and 2β.

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3. Find the zeroes of the quadratic polynomial $6x^2 - 3 - 7x$ and verify the relationship between the zeroes and the coefficients of the polynomial.

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4. Solve the quadratic polynomial $2x^2 + ax - a^2$ for x.

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5. If one sero of a polynomial $\left(a^2 + 9\right)x^2 + 13x + 6a$ is the reciprocal of the other , then find the value of a .

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6. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively :

$\frac{1}{4}, -1$

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7. Find a quadratic polynomial each with the given numbers as the sum and product of its zeroes respectively :

$\sqrt{2}, \frac{1}{3}$

View Text Solution

8. Find the quadratic polynomial , the sum and product of whose seroes are 0 and $-\frac{3}{5}$ respectively , Hence find the zeroes .

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9. Find a cubic polynomial when the sum , sum of the products of its zeroes taken two at a time and product of its zero are 2,-7,-14 respectively .

View Text Solution

10. Solve for x : $3x^2 - 2\sqrt{6x} + 2 = 0$

View Text Solution

11. For what value of k are the roots of the quadratic polynomial $kx(x-2)+6=0$ are equal ?

View Text Solution

12. Find the value of k if $(x-2)$ is a factor of $f(x) = x^3 + 2x^2 - kx + 10$ .Also determine whether $(x+5)$ is also a

factor .

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Long Answer Type Questions

1. On dividing $\left(x^3-3x^2+x+2\right)$ by a polynomial g(x) , the quotient and remainder are $(x-2)$ and $(-2x+4)$ respectively .Find the value of g(x).

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2. Find the zeroes of the quadratic polynomial $7y^2-\frac{11}{3}y-\frac{2}{3}$ and verify the relationship between the zeroes and the coefficients.

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3. When divided by $(x-3)$, the polynomials $\left(x^3-px^2+x+6\right)$ and $\left(2x^3-x^2-(p+3)x-6\right)$ leaves the same remainder .Find the value of p.

View Text Solution

4. If$(x-2)$ is a factor of the expression $2x^3+ax^2+bx-14$ and when divided by $(x-3)$ the remainder is 52 , find the values of a and b .

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5. Find the value of k for which the polynomial $(k+4)^2+(k+1)x+1$ has equal roots . Also find these roots .

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6. Find the value of k such that the polynomial $x^2 - (k+6)x + 2(2k-1)$ has sum of its zeroes equal to half to their product.

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Assertion And Reasoning Based Questions

1. Assertion : The degree of the polynomial $(x+4)(x-2)(x-3)$ is 4.

A. Both and Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.

B. The Assertion and the Reason are correct but the Reason is not he correct explanation of the Assertion

C. Assertion is true but the Reason is false

D. Assertion is false but the Reason is true .

Answer: D

View Text Solution

2. Assertion : Degree of a zero polynomial is not defined .

Reason : Degree of a non-zero constant polynomial is 0.

A. Both and Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.

B. The Assertion and the Reason are correct but the Reason is not he correct explanation of the Assertion

C. Assertion is true but the Reason is false

D. Assertion is false but the Reason is true .

Answer: B

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3. Assertion :$p(x) = 4x^3 - x^2 + 5x^4 + 3x - 2$ is a polynomial of degree 3 .

Reason : The highest power of x in the polynomial p(x) is the degree of the polynomial .

A. Both and Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.

B. The Assertion and the Reason are correct but the Reason is not he correct explanation of the Assertion

C. Assertion is true but the Reason is false

D. Assertion is false but the Reason is true .

Answer: D

View Text Solution

4. Assertion : If one zero of polynomial p(x) = $\left(k^2 + 4\right)x^2 + 13x + 4k$ is reciprocal of other , then k = 2 .

Reason : If $(x - a)$ is a factor of p(x) , then p(a) =0 i.e., a is zero of p(x)

A. Both and Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.

B. The Assertion and the Reason are correct but the Reason is not he correct explanation of the Assertion

C. Assertion is true but the Reason is false

D. Assertion is false but the Reason is true .

Answer: A

View Text Solution

5. Assertion :$x^2 + 7x + 12$ has no real zeroes .

Reason : A quadratic polynomial can have at the most two zeroes .

A. Both and Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.

B. The Assertion and the Reason are correct but the Reason is not he correct explanation of the Assertion

C. Assertion is true but the Reason is false

D. Assertion is false but the Reason is true .

Answer: D

View Text Solution

Case Based Questions

1. Junk food is an unhealthy food option , that is high in calories and little dietary fiber , protein ,vitamins , minerals , or other important forms of nutritional value , A survay was conducted on few students who consumes junk food , β be the number of students who consumes healthy food such that $\alpha > \beta$ and α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 7x + 10$, then answer the following questions :

The type of expression of the polynomial in the above statement is :

A. quadratic

B. cubic

C. linear

D. bi-quadratic

Answer: A

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2. Junk food is an unhealthy food option , that is high in calories and little dietary fiber , protein ,vitamins , minerals , or other important forms of nutritional value , A survay was conducted on few students who consumes junk food , β be the number of students who consumes healthy food such that $\alpha > \beta$ and α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 7x + 10$, then answer the following questions :

The number of students who consumes junk food are :

A. 5

B. 7

C. 2

D. None of these

Answer: A

View Text Solution

3. Junk food is an unhealthy food option , that is high in calories and little dietary fiber , protein ,vitamins , minerals , or other important forms of nutritional value , A survay was conducted on few students who consumes junk food , β be the number of students who consumes healthy food such that $\alpha > \beta$ and α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 7x + 10$, then answer the following questions :

The number of students who consumes healthy food are :

A. 5

B. 7

C. 2

D. None of these

Answer: B

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4. Junk food is an unhealthy food option , that is high in calories and little dietary fiber , protein ,vitamins , minerals , or other important forms of nutritional value , A survay was conducted on few students who consumes junk food , β be the number of students who consumes healthy food such that $\alpha > \beta$ and α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 7x + 10$, then answer the following questions :

The quadratic polynomial whose zeroes are -3 and -4 is :

A. $x^2 + 4x + 2$

B. $x^2 + 7x + 12$

C. $x^2 - x - 12$

D. none of these

Answer: C

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5. Junk food is an unhealthy food option , that is high in calories and little dietary fiber , protein ,vitamins , minerals , or other important forms of nutritional value , A survay was conducted on few students who consumes junk food , β be the number of students who consumes healthy food such that $\alpha > \beta$ and α and β are the zeroes of the quadratic polynomial $f(x) = x^2 - 7x + 10$, then answer the following questions :

If one zero of the polynomial $x^2 - 5x + 6$ is 2 then the other zero is :

A. 6

B. 3

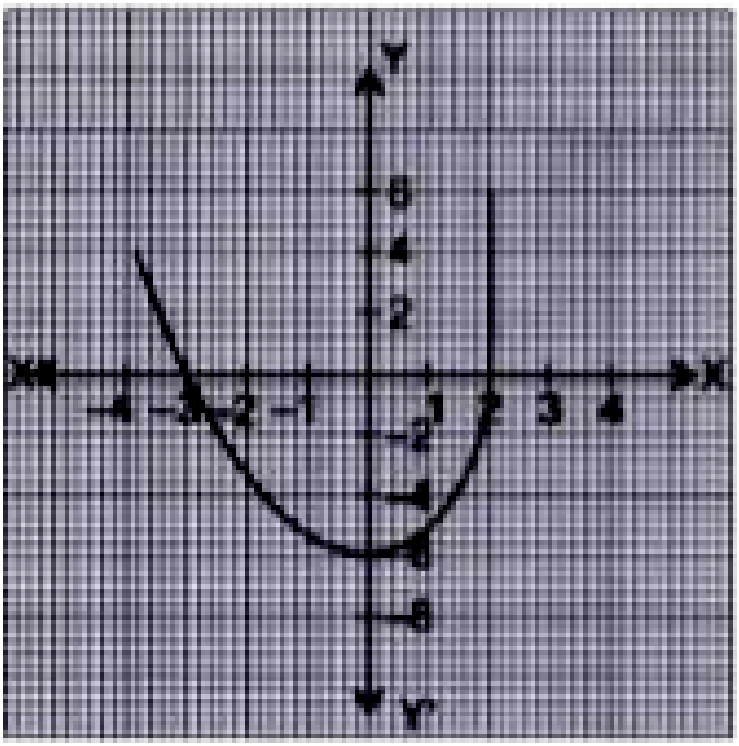
C. -6

D. None of these

Answer: C

View Text Solution

6. Venika saw a creeper on the wall of his grandmother's house , which was in the shape as shown in the figure :



How many zeroes does the polynomial have ?

A. 0

B. 2

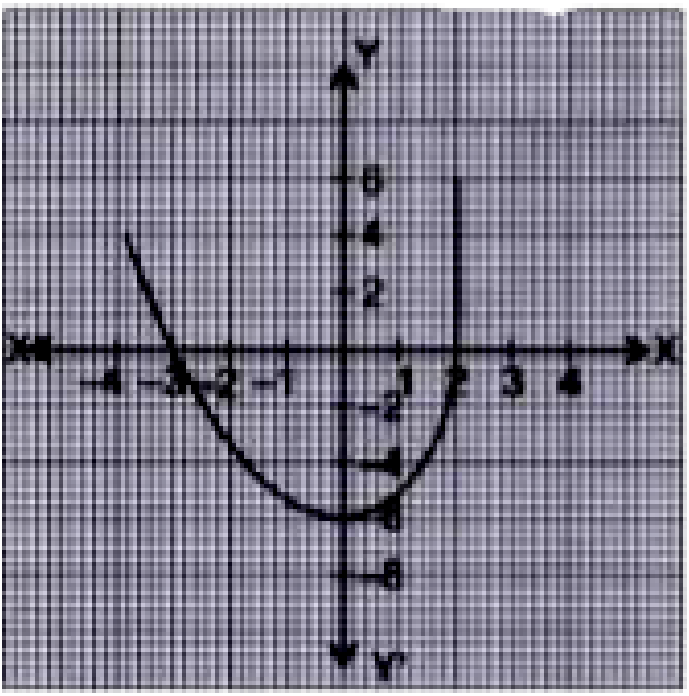
C. 1

D. 3

Answer: C

View Text Solution

7. Venika saw a creeper on the wall of his grandmother's house , which was in the shape as shown in the figure :



The zeroes of the polynomial are :

A. $2, \ -3$

B. $2, 1$

C. $-2, 3$

D. $-3, 1$

Answer: A

View Text Solution

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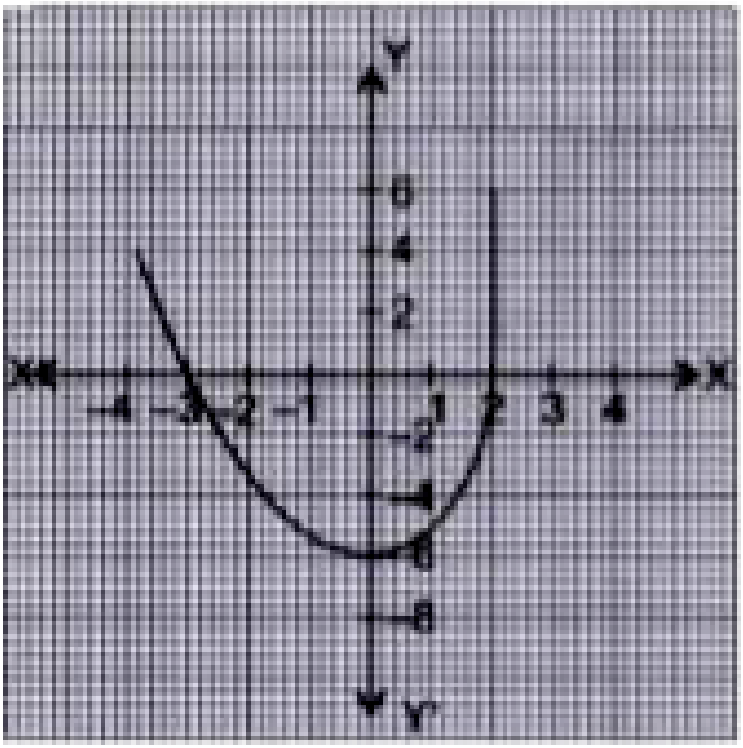
8. Venika saw a creeper on the wall of his grandmother's house , which was in the shape as shown in the figure :



The expression of the polynomial is :

A. $x^2 - x - 6$

B. $x^3 - x + 6$

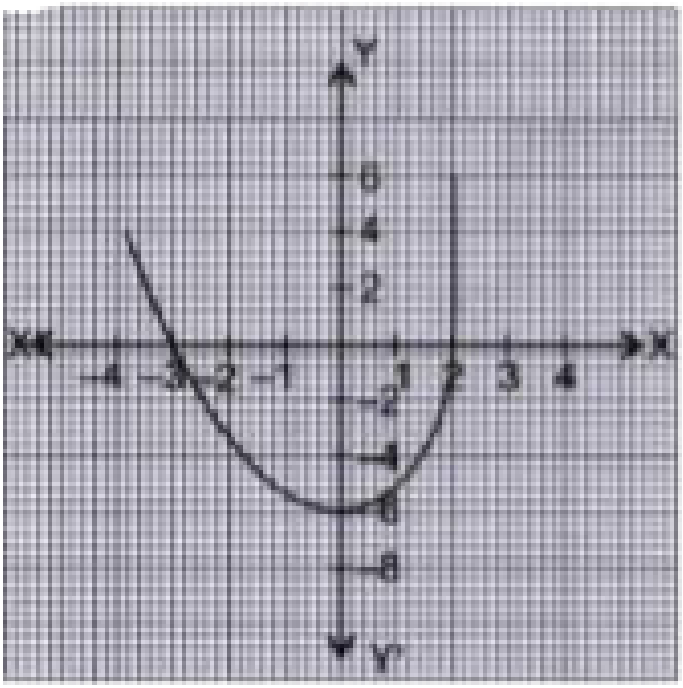
C. $x^2 + x - 6$

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

Answer: B

View Text Solution

9. Venika saw a creeper on the wall of his grandmother's house , which was in the shape as shown in the figure :



The type of expression of the polynomial is :

A. linear

B. cubic

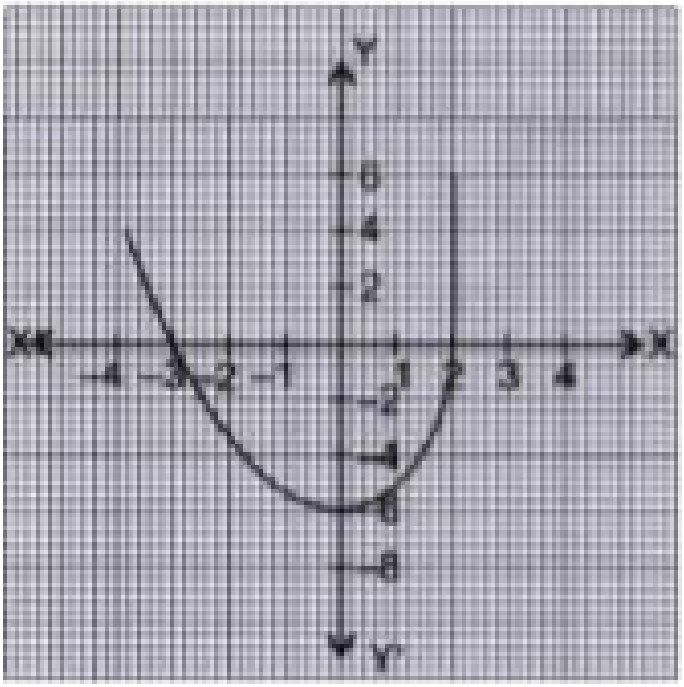
C. quadratic

D. biquadratic

Answer: C

View Text Solution

10. Venika saw a creeper on the wall of his grandmother's house , which was in the shape as shown in the figure :



For what value of x, the value of polynomial is 6 ?

A. x=3

B. $x = -4$

C. Both (a) and (b)

D. x=2

Answer: C

View Text Solution

11. For the box to satisfy certain requirements , its length must bee three metre greater than the width , and its height must be two metre less than the width.

It width is taken as x , which of the following polynomial represent volume of box ?

A. $x^2 - 5x - 6$

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

C. $x^3 - 6x^2 - 6x$

D. $x^2 + x + 6$

Answer: B

View Text Solution

12. For the box to satisfy certain requirements , its length must bee three metre greater than the width , and its height must be two metre less than the width.

Which of the following polynomial represent the area of paper sheet used to make box ?

A. $x^2 - 5x - 6$

B. $x^2 - 6x^2 - 6x$

C. $6x^2 + 4x - 12$

D. $6x^2 + 3x - 4$

Answer: B

View Text Solution

13. For the box to satisfy certain requirements , its length must bee three metre greater than the width , and its height must be two metre less

than the width.

If the width of box is 3 units , what must be its height ?

A. 1 unit

B. 2 units

C. 3 units

D. 4 units

Answer: A

View Text Solution

14. For the box to satisfy certain requirements , its length must bee three metre greater than the width , and its height must be two metre less than the width.

At the volume of 18 units , what must be its length ?

A. 6 units

B. 4 units

C. 3 units

D. 2 units

Answer: A

View Text Solution

15. For the box to satisfy certain requirements , its length must bee three metre greater than the width , and its height must be two metre less than the width.

If box is made of a paper sheet , and paper sheet costs Rs 100 per square unit , then what is the cost of paper used in making box ?

A. Rs 5400

B. Rs 2700

C. Rs 10800

D. Rs 3400

Answer: A

View Text Solution

16. The tutor in a coaching cnetre was explaning the concept of cubic polynomial as a cubic polynomial is of the form $ax^3 + bx^2 + cx + d. A \neq 0$ and it has maximum three zeroes . The zeroes of a cubic polynomial are namely the x - coordinates of the points where the graph of the polynomial intersects the x -axis .If α, β and γ are the zeroes of a cubic polynomial $ax^3 + bx^2 + cx + d$, then the relations between their zeroes and their coefficients are

$\alpha + \beta + \gamma = -b/a$

$\alpha\beta + \beta\gamma + \alpha\gamma = c/a$

$\alpha\beta\gamma = -d/a$

Which of the following are the zeroes of the polynomial $x^3 - 4x^2 - 7x + 10$?

A. $-3, 1$ and 3

B. $2, \ -1$ and 5

C. $-1, 2$ and -3

D. $-2, 1$ and 5

Answer: D

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17. The tutor in a coaching cnetre was explaning the concept of cubic polynomial as a cubic polynomial is of the form $ax^3 + bx^2 + cx + d. A \neq 0$ and it has maximum three zeroes . The zeroes of a cubic polynomial are namely the x - coordinates of the points where the graph of the polynomial intersects the x -axis .If α, β and γ are the zeroes of a cubic polynomial $ax^3 + bx^2 + cx + d$, then the relations between their zeroes and their coefficients are

$\alpha + \beta + \gamma = -b/a$

$\alpha\beta + \beta\gamma + \alpha\gamma = c/a$

$\alpha\beta\gamma = -d/a$

If $-\frac{1}{2}, -2$ and 5 are zeroes of a cubic polynomial then the sum of product of zeroes taken two at a time is :

A. $\frac{23}{2}$

B. -23

C. $-\frac{1}{2}$

D. $-\frac{23}{2}$

Answer: D

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18. The tutor in a coaching cnetre was explaning the concept of cubic polynomial as a cubic polynomial is of the form $ax^3 + bx^2 + cx + d. A \neq 0$ and it has maximum three zeroes . The zeroes of a cubic polynomial are namely the x - coordinates of the points where the graph of the polynomial intersects the x -axis .If α, β and γ are the zeroes of a cubic polynomial $ax^3 + bx^2 + cx + d$, then the relations between their zeroes and their coefficients are

$\alpha + \beta + \gamma = -b/a$

$\alpha\beta + \beta\gamma + \alpha\gamma = c/a$

$\alpha\beta\gamma = -d/a$

In which of the following polynomials the sum and product of zeroes are equal ?

A. $x^3 - x^2 + 5x - 1$

B. $x^3 - 4x$

C. $3x^3 - 5x^2 - 11x - 3$

D. Both (a) and (b)

Answer: D

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19. The tutor in a coaching cnetre was explaning the concept of cubic polynomial as a cubic polynomial is of the form $ax^3 + bx^2 + cx + d. A \neq 0$ and it has maximum three zeroes . The zeroes of a cubic polynomial are namely the x - coordinates of the points where the graph of the polynomial intersects the x -axis .If α, β and γ are the zeroes of a cubic polynomial $ax^3 + bx^2 + cx + d$, then the relations between their zeroes and their coefficients are

$\alpha + \beta + \gamma = -b/a$

$\alpha\beta + \beta\gamma + \alpha\gamma = c/a$

$\alpha\beta\gamma = -d/a$

The polynomial whose all the zeroes are same is :

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

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

C. $x^3 - 5x^2 + 6x - 1$

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

Answer: B

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20. The tutor in a coaching cnetre was explaning the concept of cubic polynomial as a cubic polynomial is of the form $ax^3 + bx^2 + cx + d. A \neq 0$ and it has maximum three zeroes . The zeroes of a cubic polynomial are namely the x - coordinates of the points where the graph of the polynomial intersects the x -axis .If α, β and γ are the zeroes of a cubic polynomial $ax^3 + bx^2 + cx + d$, then the relations between their zeroes and their coefficients are

$\alpha + \beta + \gamma = -b/a$

$\alpha\beta + \beta\gamma + \alpha\gamma = c/a$

$\alpha\beta\gamma = -d/a$

The cubic polynomial , whose graph is as shown below ,is :

A. $x^3 - 5x^2 + 8x - 4$

B. $x^3 - 7x^2 + 11x + 9$

C. $3x^3 - 4x^2 + x - 5$

D. $x^3 - 9$

Answer: A

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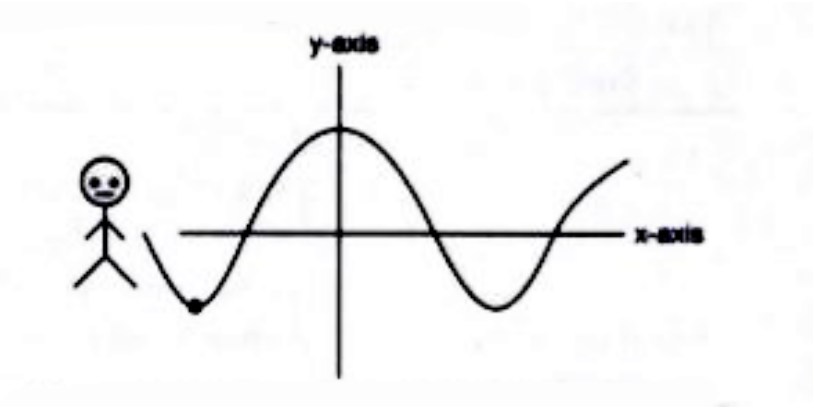
21. A boy is playing with rope which moves as shown in the figure below :



Now give the answers of following questions :

The number of zeroes of the above figure :

A. 2

B. 3

C. -2

D. 1

Answer: C

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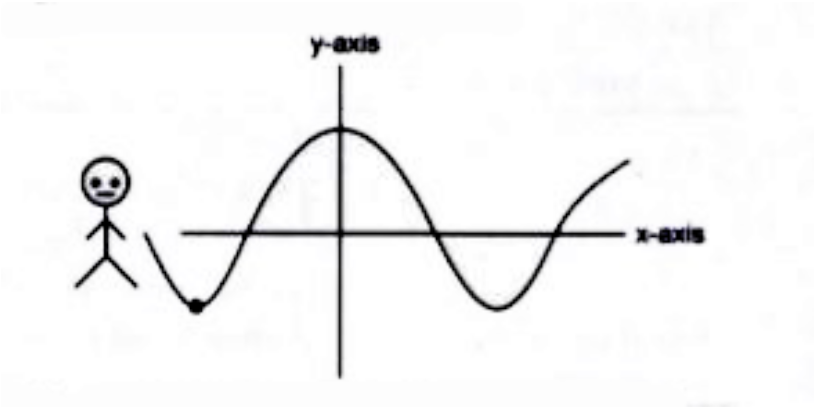
22. A boy is playing with rope which moves as shown in the figure below :



Now give the answers of following questions :

If above rope cuts x-axis at $-2, \frac{1}{2}, 1$ the polynomial p(x) will be :

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

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

C. $2x^2 - x^2 - 5x + 2$

D. $2x^3 - x^2 - 5x - 2$

Answer: A

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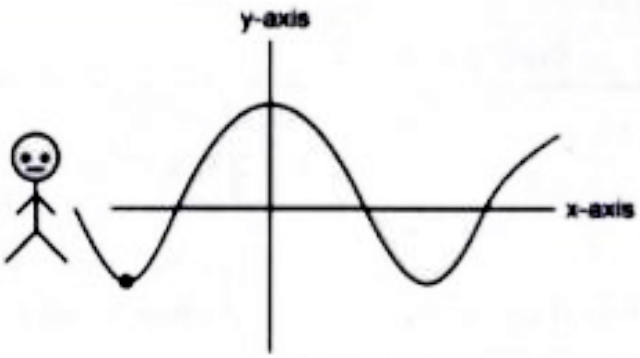
23. A boy is playing with rope which moves as shown in the figure below :



Now give the answers of following questions :

If the boy moves the above rope with more force and its moves along with polynomial P(x) = $x^3 - 4x^2 + 5x - 2$, then what are the points on which it cuts x -axis :

A. 2,1,1

B. $2, \ -1, 1$

C. 2,1,1

D. $-2, \ -1, \ +1$

Answer: A

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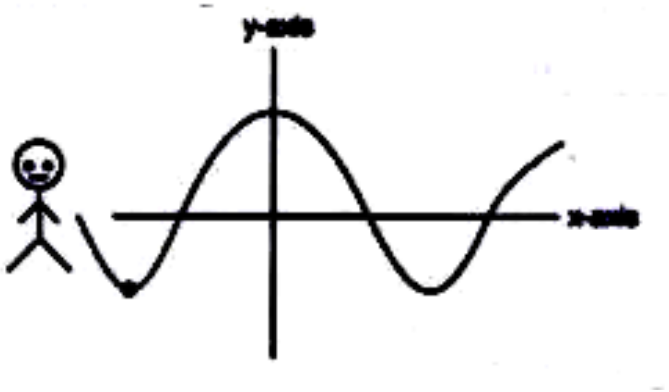
24. A boy is playing with rope which moves as shown in the figure below :



Now give the answers of following questions :

What are the sum and product of zeroes ?

A. 4,2

B. $-4, 2$

C. 5,4

D. $4, \ -2$

Answer: A

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Passage Based Questions

1. Read the following passage and answer the questions that follows :

A teacher told 10 students to write a polynomial on the black board .

Students wrote

(i) $x^2 + 2$

(ii). $2x + 3$

(iii). $x^3 + x^2 + 1$

(iv)$x^3 + 2x^2 + 1$

(v)$x^2 - 2x - 1$

(vi)$x - 3$

(vii) $x^4 + x^2 + 1$

(viii)$x^2 + 2x + 1$

(ix) $2x^3 - x^2$

(x) $x^4 - 1$

Based on the information , answer the following questions :

How many students wrote cubic polynomial ?

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2. Read the following passage and answer the questions that follows :

A teacher told 10 students to write a polynomial on the black board .

Students wrote

(i) $x^2 + 2$

(ii). $2x + 3$

(iii). $x^3 + x^2 + 1$

(iv)$x^3 + 2x^2 + 1$

(v)$x^2 - 2x - 1$

(vi)$x - 3$

(vii) $x^4 + x^2 + 1$

(viii)$x^2 + 2x + 1$

(ix) $2x^3 - x^2$

(x) $x^4 - 1$

Based on the information , answer the following questions :

Divide the polynomial $\left(x^2 + 2x + 1\right)$ by $(x + 1)$

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3. A teacher asked 10 of his students to write a polynomial in one variable on a paper and tthen to handover the paper . The following were the answers given by the students :

$2x+3, 3x^2+7x+2, 4x^3+3x^2+2, x^2+\sqrt{3x}+7, 7x+\sqrt{7}, 5x^3-7x+$

Based on the information answer the following questions :

How many of the above ten , are not polynomials ?

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4. A teacher asked 10 of his students to write a polynomial in one variable on a paper and tthen to handover the paper . The following were the answers given by the students :

$2x+3, 3x^2+7x+2, 4x^3+3x^2+2, x^2+\sqrt{3x}+7, 7x+\sqrt{7}, 5x^3-7x+$

Based on the information answer the following questions :

How many of the above ten , are quadratic polynomials ?

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Self Assessment

1. If α and $\beta$are the zeroes of the quadratic polynomial $p(x) = ax^2 + bx + c$, then evaluate :

$\alpha - \beta$

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2. If α and $\beta$are the zeroes of the quadratic polynomial $p(x) = ax^2 + bx + c$, then evaluate :

$\alpha^2\beta + \alpha\beta^2$

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3. If α and $\beta$are the zeroes of the quadratic polynomial $p(x) = ax^2 + bx + c$, then evaluate :

$\alpha^4 + \beta^4$

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4. If α and $\beta$are the zeroes of the quadratic polynomial $p(x) = ax^2 + bx + c$, then evaluate :

$$\frac{1}{a\alpha + b} + \frac{1}{\alpha\beta + b}$$

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5. If α and $\beta$are the zeroes of the quadratic polynomial $p(x) = ax^2 + bx + c$, then evaluate :

$$\frac{1}{\alpha} + \frac{1}{\beta} - 2\alpha\beta$$

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6. If α and $\beta$are the zeroes of the quadratic polynomial $p(x) = ax^2 + bx + c$, then evaluate :

$$a\left(\frac{\alpha^2}{\beta} + \frac{\beta^2}{\alpha}\right) + b\left(\frac{\alpha}{\beta} + \frac{\beta}{\alpha}\right)$$

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7. Find the relation between a and b , if

$f(x) = \left(4x^3 - 3x^2 + 2ax + b\right)$ be exactly divisible by $(x + 2)$

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8. Find the relation between a and b , if

$f(x) = \left(ax^5 + 3bx^3 + 8\right)$

be exactly divisible by $(x - 2)$.

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9. Express :

$f(x) = 3x^3 - 4x^2 + 5x + 6$ as a polynomial of $x + 1$

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10. Express :

$f(x) = x^4 - x^3 + 2x^2 - 3x + 1$ as a polynomial of $x - 3$

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11. Express :

$f(x) = 3x^4 + 4x^3 + 7x^2 + 8x - 8$ as a polynomial of $x + 1$

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12. Express :

$f(x) = 4x^5 - 6x^4 + 3x^3 - 5x + 2$ as a polynomial of $x + 2$.

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13. For $f(x) = (2x^3 + x^2 - 5x + 2)$, find the values for $f(x) = -1, 1, -2$ and prove that

$f(1) = f(-2)$ and $2f(-1) = f(2)$

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14. Obtain all zeroes of the polynomial $f(x) = 2x^4 + x^3 - 14x^2 - 19x - 6$ if two of its zeroes are -2 and -1 .

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15. Find the polynomial whose zeroes are $1, -2, 3$ and -4 .

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16. Find all the zeroes of the polynomial $x^3 + 3x^2 - 2x - 6$, if two of its zeroes are $-\sqrt{2}$ and $\sqrt{2}$

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17. Find the polynomial whose zeroes $2, \ -3, 4 \ \text{and} \ -1$

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18. In the equation $f(x) = \left(x^4 + 2x^3 - 13x^2 - 14x + 24\right)$, two zeroes are 1 and -2 .Find the other zeros .

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19. Find the zeroes of the following polynomials :

$\left(x^4 - 9x^2 + 4x + 12\right) = 0$

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20. Find the zeroes of the following polynomials :

$\left(x^4 - 6x^3 + 12x^2 - 10x + 3\right) = 0$

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21. Find the zeroes of the polynomial such that the sum of two of the zeroes in each polynomial is 0:

$f(x) = x^3 - 5x^2 - 16x + 80$

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22. Find the zeroes of the polynomial such that the sum of two of the zeroes in each polynomial is 0:

$f(x) = 4x^3 + 16x^2 - 9x - 36$.

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23. Find the zeroes of x in $\frac{x+3}{x-3} + 6\left(\frac{x-3}{x+3}\right) = 5$

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24. Find the zeroes of x in

$$\frac{x+1}{2}+\frac{2}{x+1}=\frac{x+1}{3}+\frac{3}{x+1}-\frac{5}{6}$$

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