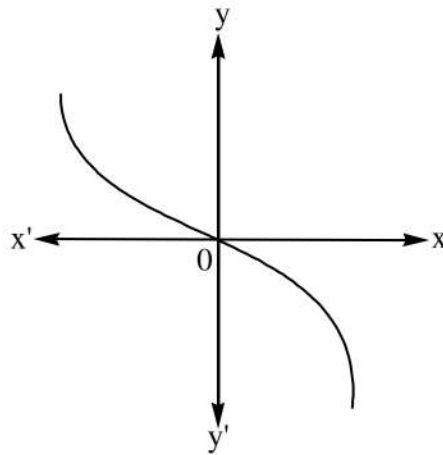


2. POLYNOMIALS

1. The graph of a polynomial $y = f(x)$ is shown in the figure. What is the number of zeroes of $f(x)$?

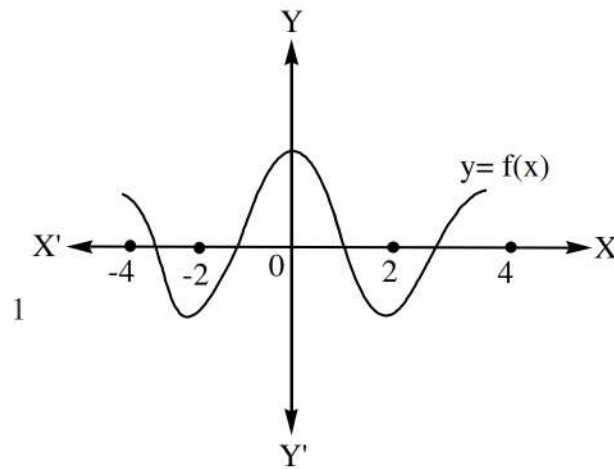


[Ans : One]

2. If the graph of a polynomial $y = p(x)$ does not cut the x - axis at any point, then how many zeroes does the polynomial have?

[Ans : No zero]

3. Find the number of zeroes lying between -2 and 2 of the polynomial f whose graph is given below :



[Ans : The curve intersects x - axis at two points between $x = -2$ and $x = 2$. So, the number of zeroes is two.]

4. The graph of a polynomial $p(x)$ cuts the x - axis at two places and touches it at three places. What is the number of zeroes of $p(x)$?

[Ans : Number of zeroes is 5]

5. α and β are zeroes of polynomial $x^2 - 6x + a$, Find the value of a , if $3\alpha + 2\beta = 20$.

[Ans : $a = -16$]

6. Find the value of m , if one zero of the polynomial $(m^2 + 4)x^2 + 65x + 4m$ is reciprocal of the other.

[Ans : $m = 2$]

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

[Ans : $x^2 + 2x + 1$]

8. Find the zeroes of the quadratic polynomial $3x^2 - 3\sqrt{3}x + 2$ and verify the relationship between the zeroes and the coefficients.

[Ans : Zeroes are $\frac{2}{\sqrt{3}}$ and $\frac{1}{\sqrt{3}}$]

9. If α and β are zeroes of a quadratic polynomial $x^2 - x - 30$, then form a quadratic polynomial whose zeroes are $2 - \alpha$ and $2 - \beta$.

[Ans : $x^2 - 3x - 28$]

10. Let α and β are zeroes of a quadratic polynomial $x^2 - 3$, then form a quadratic polynomial whose zeroes are $\frac{1}{\alpha}$ and $\frac{1}{\beta}$.

[Ans : $x^2 - \frac{1}{3}$ (or) $3x^2 - 1$]

11. If one zero of the polynomial $2x^2 - 5x - (2k + 1)$ is twice the other, find both the zeroes of the polynomial and the value of k.

[Ans : Zeroes are $\frac{5}{6}$ and $\frac{5}{3}$ and the value of k is $\frac{-17}{9}$]

12. For what value of x both the polynomials $x^2 - 3x + 2$ and $x^2 - 6x + 5$ becomes zero ?

[Ans : At $x = 1$]

13. If α and β are zeroes of the polynomial $x^2 + 6x + 9$, then form a polynomial whose zeroes are $-\alpha$ and $-\beta$.

[Ans : $x^2 - 6x + 9$]

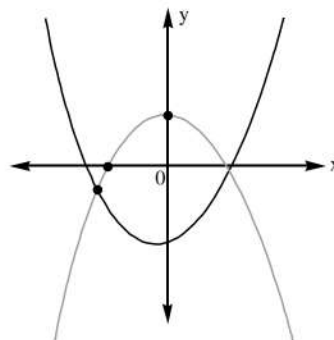
14. If one zero of a polynomial $x^2 + (3 - \sqrt{2})x - 3\sqrt{2}$, is $\sqrt{2}$ then find the other zero.

[Ans : -3]

15. If one zero of the polynomial $(a^2 + 9)x^2 + 13x + 6a$ is reciprocal of the other, find the value of 'a'.

[Ans : $a = 3$]

16. Two polynomials are shown in the graph below.



Find the number of zeroes that are common to both the polynomials. Explain your answer.

[Ans : Number of zeroes that are common to both the polynomials as 1]

17. $P(x) = 2x^2 - 6x - 3$. The two zeroes are of the form: $\frac{3 \pm \sqrt{k}}{2}$; where k is a real number

Use the relationship between the zeroes and coefficients of a polynomial to find the value of k . Show your steps.

[Sol. : Write the equation for the product of zeroes as :

$$\left(\frac{3 + \sqrt{k}}{2}\right)\left(\frac{3 - \sqrt{k}}{2}\right) = \frac{-3}{2}$$

Simplifies the above equation and writes : $\frac{9 - k}{4} = \frac{-3}{2} \Rightarrow k = 15$]

18. Find the distance between the zeroes of the polynomial $f(x) = 2x^2 - x - 6$. Show your steps.

[Sol. : Factorise $f(x)$ as $(x - 2)(2x + 3)$.

Write $f(x) = 0$ and find the coordinates of the zeroes as $(2, 0)$ and $\left(\frac{-3}{2}, 0\right)$

The distance between the zeroes as $\frac{7}{2}$ units].