

INDIAN SCHOOL AL WADI AL KABIR

Department: Mathematics

Class X

Worksheet – Polynomials

26-04-2022

Questions of 1 mark each

Q.1.	If one zero of the quadratic polynomial $x^2 + 3x + k$ is 2, then find the value of k .
Q.2.	If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4, find the value of 'a'.
Q.3.	If α and $\frac{1}{\alpha}$ are the zeroes of the polynomial $3x^2 + x + (k - 2)$ find k .
Q.4.	Find a quadratic polynomial whose sum of zeroes is $-\frac{2}{3}$ and product of zeroes is -3.
Q.5.	If one zero of the quadratic polynomial $(k + 3)x^2 + kx + 3$ is -2, find k .
Q.6.	<p>The graph of $y = p(x)$, where $p(x)$ is a polynomial in variable x, is given below.</p> <p>Find the number of zeroes of $p(x)$.</p> <div style="text-align: center; margin-top: 20px;"> </div>

Questions of 2 marks each

Q.7.	If α and β are the zeroes of a quadratic polynomial $x^2 + 6x + 9$, then form a quadratic polynomial whose zeroes are $-\alpha$ and $-\beta$.
Q.8.	Find the condition that zeroes of polynomial $p(x) = ax^2 + bx + c$ are reciprocals of each other.
Q.9.	If m and n are the zeroes of the polynomial $ax^2 - 5x + c$, find the value of 'a' and 'c' when $m + n = mn = 10$

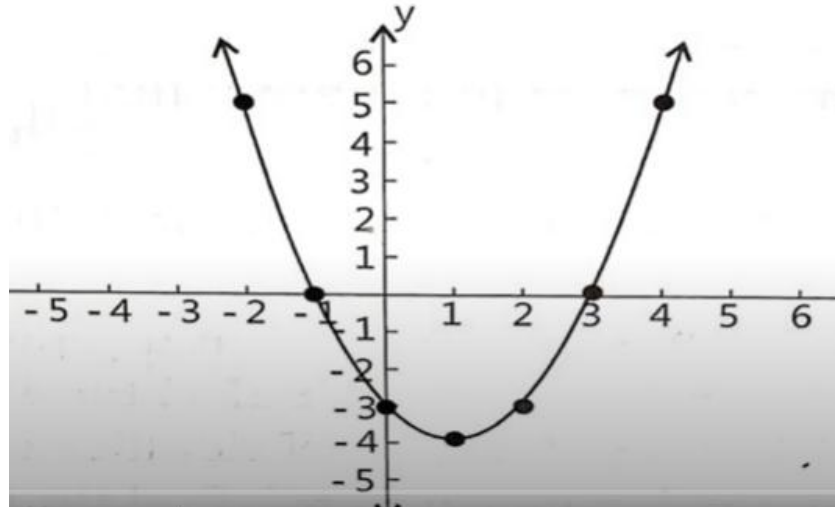
Q.10.	If α and β are the zeroes of the polynomial $f(x) = x^2 - 4x - 5$ then find the value of $\alpha^2 + \beta^2$.
Q.11.	If α and β are the zeros of the polynomial $x^2 - 5x + m$ such that $\alpha - \beta = 1$, find m .
Q.12.	<p>A teacher asked 10 of his students to write a polynomial in one variable on a paper and then to handover the paper. The following were the answers given by the students:</p> <p>$2x + 3, 3x^2 + 7x + 2, 4x^3 + 3x^2 + 2, x^3 + \sqrt{3x} + 7, 7x + \sqrt{7}, 5x^3 - 7x + 2, 2x^2 + 3 - \frac{5}{x},$ $5x - \frac{1}{2}, ax^3 + bx^2 + cx + d, x + \frac{1}{x}$</p> <p>Answer the following questions:</p> <p>(i) How many of the above ten, are not polynomials?</p> <p>(ii) How many of the above ten, are quadratic polynomials?</p>
Q.13.	Find the value of m if one zero of the polynomial $(m^2 + 4)x^2 + 65x + 4m$ is reciprocal of the other.
Questions of 3 marks each	
Q.14.	Find the zeroes of the polynomial $2x^2 - x - 6$ and verify the relationship of zeroes with the coefficients.
Q.15.	If α and β are the zeroes of the polynomial $3x^2 - x - 4$, find the value of $\alpha^4\beta^3 + \alpha^3\beta^4$.
Q.16.	If α and β are the zeroes of the polynomial $x^2 - x - 2$, find a polynomial whose zeroes are $(2\alpha + 1)$ and $(2\beta + 1)$.
Q.17.	Obtain zeroes of $4\sqrt{3}x^2 + 5x - 2\sqrt{3}$ and verify relation between its zeroes and coefficients.
Q.18.	If α and β are the zeroes of the polynomial $x^2 + 4x + 3$, find a polynomial whose zeroes are $(1 + \frac{\beta}{\alpha})$ and $(1 + \frac{\alpha}{\beta})$.
Q.19.	If the sum of the squares of zeroes of the quadratic polynomial $f(x) = x^2 - 8x + k$ is 40, then find the value of k .

Question of 4 marks

Q.20.

Case Study Based

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



- (i) Name the shape in which the wire is bent.
- (ii) Find the number of zeroes of the polynomial (shape of the wire).
- (iii) Find the zeroes of the polynomial.
- (iv) Find the quadratic polynomial from the given zeroes.

ANSWERS

Q.1	-10	Q.2	$\frac{3}{2}$	Q.3	5	Q.4	$3x^2 + 2x - 9$
Q.5	$-\frac{15}{2}$	Q.6	5	Q.7	$x^2 - 6x + 9$	Q.8	$c = a$
Q.9	$a = \frac{1}{2}, c = 5$	Q.10	26	Q.11	6	Q.12	(i) 3 (ii) 1
Q.13	$m = 2$	Q.14	Zeroes 2 and $-\frac{3}{2}$	Q.15	$-\frac{64}{81}$	Q.16	$x^2 - 4x - 5$
Q.17	$-\frac{2}{\sqrt{3}}, \frac{\sqrt{3}}{4}$	Q.18	$3x^2 - 16x + 16$	Q.19	$k = 12$	Q.20	(i) Parabola (ii) 2 (iii) -1, 3 (iv) $x^2 - 2x - 3$