**Polynomials – CBSE Class 10 Mathematics/Previous Year Question Paper Questions & Answers/Model Questions**

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**1. If $\alpha$ and $\beta$are zeros of the quadratic polynomial f(x) = $x^2$-x-4, then what is the value of$\frac{1}{\alpha}+\frac{1}{\beta}-\alpha\beta$?**

**Answer:**

$\alpha+\beta$ = 1, $\alpha\beta$= -4

Now $\frac{1}{\alpha}+\frac{1}{\beta}-\alpha\beta = \frac{\alpha+\beta}{\alpha\beta} - \alpha\beta = \frac{1}{-4} - (-4) = \frac{-1}{4} + 4 = \frac{15}{4}$

**2. What is the value of x, for which the polynomials $x^2$-1 and $x^2$-2x+1 vanish simultaneously.**

**Answer:**

$x^2$- 1 = (x – 1) (x + 1)

$x^2$ – 2x + 1 = (x – 1) (x -1)

Both have x = 1 as zero, so both vanish if x = 1

**3. If one zero of the polynomial 3$x^2$+8x + k is the reciprocal of the other, then what is the value of k?**

**Answer:**

Let the zeroes be $\alpha$ and $\frac{1}{\alpha}$

Product of zeroes = $\alpha \times \frac{1}{\alpha} = \frac{k}{3}$

k = 3

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

**Answer:**

**If -3 is a zero of the polynomial p (-3) = 0**

**(k -1)$(-3)^2$+k (-3) + 1= 0**

**(k – 1)9 – 3k + 1 = 0**

**9k – 9 – 3k + 1 = 0**

**6k – 8 = 0**

**k = $\frac{8}{6}$ = $\frac{4}{3}$**

**5. If one zero of the quadratic polynomial $x^2$ + 3x + k is 2, then what is the value of k?**

**Answer:**

**Let p(x) = $x^2$+3x + k**

**If 2 is a zero of p(x), p (2) = 0**

**p (2) = $2^2$+3 $\times$2 + k = 0**

**4 + 6 + k = 0**

**10 + k = 0**

**k = -10**

**6. If one zero of a quadratic polynomial $kx^2 + 3x + k$ is 2, then what is the value of k?**

**Answer:**

**Since 2 is a zero of the quadratic polynomial, p (2) = 0**

**k ($2^2$) + 3$\times$ 2 + k = 0**

**4k + 6 + k = 0**

**5k +6 = 0**

**5k = -6**

**k = $\frac{-6}{5}$**

**7. If $\alpha$ and $\beta$are the zeros of the polynomial 2$x^2$-13x + 6, then what is the value of$\alpha + \beta$?**

**Answer:**

**$\alpha + \beta$ = $\frac{-b}{a}$= $\frac{-(-13)}{2}$ = $\frac{13}{2}$**

**8. If the sum of the zeroes of the quadratic polynomial k$x^2$+2x + 3k is equal to their product, then what is the value of k?**

**Answer:**

**Let the zeroes be $\alpha$ and$\beta$.**

**$\alpha + \beta$ = $\frac{-2}{k}$**

**$\alpha\beta$ = $\frac{3k}{k}$ = 3**

**$\alpha + \beta = \alpha\beta$ (given)**

**$\frac{-2}{k}$ = 3**

**k = $\frac{-2}{3}$**

**9. Find the quadratic polynomial, the sum of whose zeroes is -5 and their product is 6.**

**Answer:**

**Let the zeroes be $\alpha$ and $\beta$**

**Given $\alpha + \beta$= -5**

$\alpha\beta$ = 6

Required quadratic polynomial is $x^2$- $(\alpha + \beta)x + \alpha\beta$

= $x^2$- (-5x) + 6 = $x^2$+5x + 6

**10. If the sum and product of the zeroes of a quadratic polynomial are 3 and -10 respectively, find the quadratic polynomial?**

**Answer:**

$x^2 - (\alpha + \beta)x + \alpha\beta$ = $x^2$ -3x – 10, which is the required quadratic polynomial.

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