# SUNRISE EDUCATION CENTRE

An institute for 9$^{th}$ -12$^{th}$ MATHEMATICS (Basic/Standard, Core/Applied) By Er. Mohit Nariyani.

## Worksheet - I
### Chapter-2

### Polynomials

1. Find the zeroes of given polynomials and verify the relationship of zeroes with these co-efficients.
    (i) $2x^2 - x - 6$
    (ii) $x^2 - 3x - 28$
    (iii) $9t^2 - 6t + 1$
    (iv) $3x^2 - 75$
    (v) $3x^2 - 2$

2. Find a quadratic polynomial, the sum and product of whose zeroes are $\sqrt{3}$ and $\frac{1}{\sqrt{3}}$ respectively.

3. Find the quadratic polynomial whose zeroes are -2 and -5. Verify the relationship between zeroes and coefficients of the polynomial.

4. Find a quadratic polynomial, the sum and product of whose zeroes are -8 and 12 respectively. Hence find the zeroes

5. If α and β are the zeroes of a polynomial such that α + β = -6 and αβ = 5, then find the polynomial.

6. Find the value of "p" from the polynomial $x^2 + 3x + p$, if one of the zeroes of the polynomial is 2.

7. If the sum of the zeroes of the polynomial $p(x) = (k^2 - 14)x^2 - 2x - 12$ is 1, then find the value of k

8. Find the value of "x" in the polynomial $2a^2 + 2xa + 5a + 10$ if (a + x) is one of its factors.

9. If the product of zeroes of the polynomial $ax^2 - 6x - 6$ is 4, find the value of a. Find the sum of zeroes of the polynomial.

10. If the sum of zeroes of the quadratic polynomial $3x^2 - kx + 6$ is 3, then find the value of k

11. If the sum of the zeroes of the polynomial p(x) = $(k^2 - 14)x^2 - 2x - 12$ is 1, then find the value of k.

12. Find a quadratic polynomial whose zeroes are $3 + \sqrt{2}$ $and$ $3 - \sqrt{2}$.

13. If the zeroes of the polynomial $x^2 + px + q$ are double in value to the zeroes of $2x^2 - 5x - 3$, find the value of p and q.

14. If $\alpha$ and $\beta$ are zeros of $3x^2 + 5x + 13$ ,then find the value of $\frac{1}{\alpha} + \frac{1}{\beta}$.

15. If $\alpha$ and $\beta$ are zeros of quadratic polynomial $p(s) = 3s^2 - 6s + 4$, find the value of $\frac{\alpha}{\beta} + \frac{\beta}{\alpha} + 2\left(\frac{1}{\alpha} + \frac{1}{\beta}\right) + 3\alpha\beta$.

16. If $\alpha$ and $\beta$ are zeros of $x^2 + x - 2$ ,then find the value of $\frac{1}{\alpha} - \frac{1}{\beta}$.

17. If $\alpha$ and $\beta$ are zeros of $px^2 - 2x + 3p$ and $\alpha + \beta = \alpha\beta$ ,then find the value of $p$.

18. If $\alpha$ and $\beta$ are zeros of the quadratic polynomial such that $\alpha + \beta = 24$ and $\alpha - \beta = 8$ find a quadratic polynomial having $\alpha$ and $\beta$ as its zeros.

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## Worksheet - II
### Chapter-2

### **Polynomials**

1. If $x = \frac{2}{3}$ and $x = -3$ are the roots of the quadratic equation, $ax^2 + 7x + b = 0$ then find the values of a and b.

2. If $-4$ is a zero of the polynomial, $x^2 - x - (2k + 2)$ then find the value of $k$.

3. If α and β are the zeros of the polynomial $2x^2 + 7x + 5$, write the value of $\alpha + \beta + \alpha\beta$.

4. Write the zeros of the quadratic polynomial $f(x) = 4\sqrt{3}x^2 + 5x - 2\sqrt{3}$.

5. If $\alpha$ and $\beta$ are zeros of quadratic polynomial $p(s) = 3s^2 - 6s + 4$, find the value of $\left(\frac{1}{\alpha} - \frac{1}{\beta}\right)$.

6. If α, β be the zeros of the polynomial $2x^2 + 5x + k$ such that $\alpha^2 + \beta^2 + \alpha\beta = \frac{21}{4}$ then find k.

7. Find the zeros of the following quadratic polynomials and verify the relationship between the zeros and the coefficients: $2\sqrt{3}x^2 - 5x + \sqrt{3}$

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

9. If one zero of the quadratic polynomial, $f(x) = 4x^2 - 8kx - 9$ is negative of the other, then find the value of $k$.

10. If $\alpha$ and $\beta$ are zeros of quadratic polynomial $p(x) = x^2 - 2x + 3$, find the value of
    (i) $\alpha - \beta$
    (ii) $\alpha^2\beta + \alpha\beta^2$
    (iii) $\alpha^4 + \beta^4$
    (iv) $\alpha^3 + \beta^3$