POLYNOMIALS.

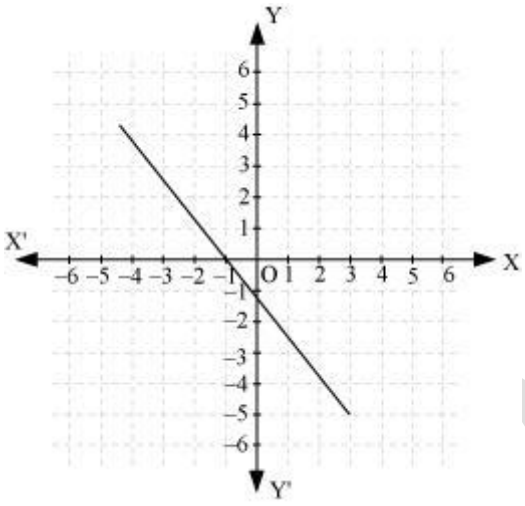
1) Find the condition, under which, the zeroes of a quadratic polynomial are

(a) same in magnitude but have opposite sign (1 mark)

(b) reciprocals of each other (1 mark)

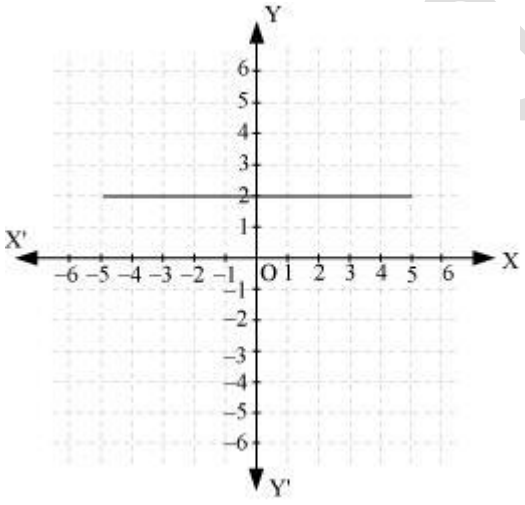
2) For some polynomial $p(x)$, the graphs of $y = p(x)$ are given below. Find the number of zeroes of the polynomials in each case.

(a)



$\left(\frac{1}{2} \text{ mark}\right)$

(b)



$\left(\frac{1}{2} \text{ mark}\right)$

3) Find the zeroes of the polynomial $p(x) = x^2 - 8x + 15$. Verify the relationship between the zeroes and the coefficients of the polynomial.

4) The sum of the zeroes of a quadratic polynomial is -6 and the product of its zeroes is 4. Form a polynomial using this information.

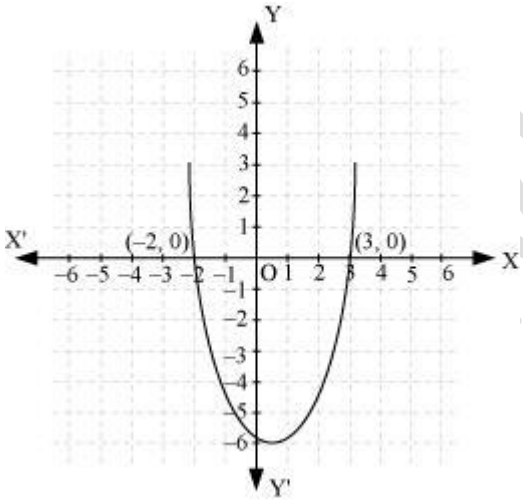
5) Form a quadratic polynomial whose zeroes are $5+\sqrt{3}$ and $5-\sqrt{3}$.

6) Find a quadratic polynomial such that one of its zeroes is $1+\sqrt{2}$ and the sum of its zeroes is 2.

7) Find the value of k so that the sum of the zeroes of the polynomial $3x^2 + (2k + 1)x - k - 5$ is equal to the product of its zeroes.

8) On dividing $p(x) = x^6 + 1$ by a polynomial $g(x)$, the quotient is found to be $q(x) = x^4 - x^2 + 1$ and the remainder $r(x) = 0$. Find $g(x)$.

9) The following figure shows the graph of a quadratic polynomial $y = p(x)$. Find the sum and the product of the zeroes of the polynomial.



10) If α and β are two numbers such that $\alpha + \beta = 16$ and $\alpha - \beta = 4$, then form a quadratic polynomial whose zeroes are α and β.